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THE
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### The Capitol Building.

It is said that the walls of the Capitol building at Washington have been recently found too weak to bear the magnificent iron dome which is in process of erection, and that this portion of the work will have to be suspended. The new dome was to have taken the place of the flatter and lighter one previously employed, and a strengthening of the walls would involve almost a reconstruction of the whole central portion of the building. The new houses of Congress, at the extremities of the wings of the building, are proceeding without interruption.

### Improved Hay and Stalk Cutter.

The machine represented by the accompanying engravings is the invention of E. G. Cushing, of Dryden, N. Y. It, like many of the best cutters of such material, carries the knives on the balance wheel, and gives them a rapid motion, better adapted to the performance of the work than the slow motions imparted when the same are mounted on rollers. There have been some difficulties, however, in the arrangement and working of machines with knives mounted in this manner, which difficulties this invention is intended to surmount.

The knives are firmly secured on a balance wheel, in an inclined position, forming lines tangential to a small circle, drawn on the face of the wheel, so that the cut is performed with a kind of shearing or drawing stroke. This effect is still further increased by a motion which is imparted to the lower knife, and also to the feed rollers, which will be described below. The motion of the lower knife and rollers is imparted by very simple mechanism, which also, as a secondary result, enables the feed to be very conveniently graduated, so as to cut the material into longer or shorter pieces at will.

Fig. 1 is a perspective view of the whole, and Fig. 2 a front elevation of the working parts alone. The same letters refer to like parts in both the figures. A is the ordinary feed box, and B the ordinary frame supporting the machine. The letter C denotes a casting mounted on the shaft S, so that it may rock transversely, and which carries in suitable bearings, the two feed rollers D and E, which thus rock or oscillate with each movement of C. The front edge of this casting also carries the lower or leger knife. The lower roller E is mounted firmly in C, but the upper roller D simply rests in deep notches at each bearing, and is held down by a spring, as represented, so that it may rise to accommodate the material which is drawn between the rollers. F is the balance wheel, mounted on the shaft L, and carrying the cutters G, which may be one or more. H is a stout arm, projecting from C, and J is a cam or wiper, projecting from L. At each revolution of the balance wheel, the wiper J acts on the under surface of H, and by lifting that extremity of C, imparts one-half the rocking motion desired, while the gravity of C brings it rapidly back to its position, so soon as the wiper has released it. M is a ratchet wheel on the overhanging

## CUSHING'S HAY AND STALK CUTTER.

*Fig. 1*

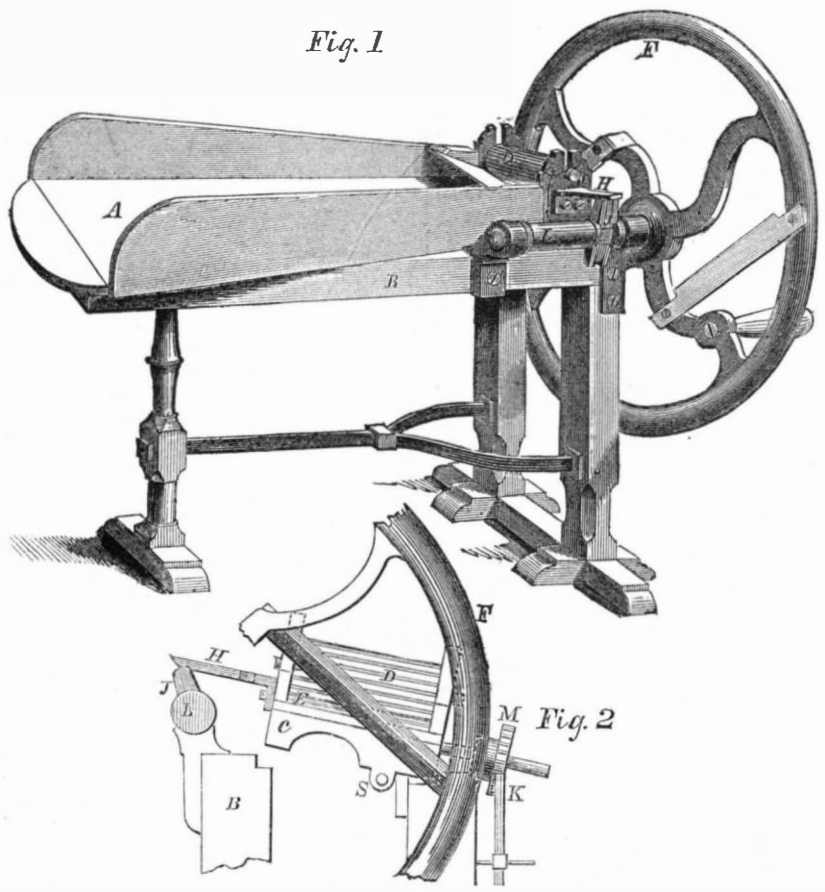



*Fig. 2*

extremity of the roller E. K is a pawl hinged to the substantial frame B, and impelled by a spring, to catch in the teeth of the ratchet M. It follows from this arrangement, that at each oscillation of the frame C, the ratchet wheel M is moved up and down, past the pawl K, which catches the teeth, and partially rotates it at each movement, thus imparting the necessary feed motion to the rollers. The extent of the feed may be very readily increased or diminished by a simple change of the pawl K. The ratchet wheel M is much longer than represented in our engraving, and allowing H to act on M near the extremity of the shaft, gives M a greater angular motion than when H is allowed to stand close to the machine, and consequently at a point where M has a smaller linear movement.

This invention was secured by letters patent granted on the 5th of May last. For further information, the inventor may be addressed as above.

## BELSON'S CAST IRON SKATE.

*Fig. 1*

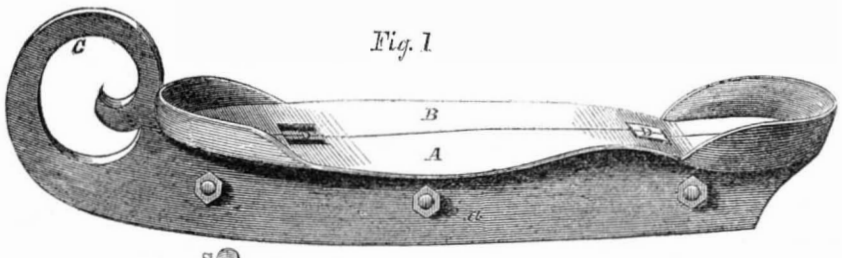



*Fig. 3*

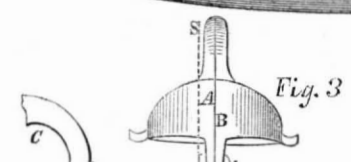
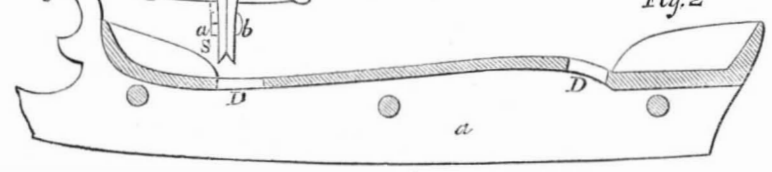



*Fig. 2*




There are few exercises known to modern civilization and refinement more exciting and healthy than skating. The stimulus of cold air and the facility for extremely rapid locomotion are excitements to a vigorous display of muscular strength which, when combined with the skill acquired by practice, induces the very highest degree of enthusiasm. It is easy to rival the speed of the race horse, with good skates, new ice, and vigorous well trained muscles. Any invention which proposes to cheapen the luxury, and extend the benefits of skating cannot be justly considered as of very trifling importance.

The figures here presented represent probably the cheapest, and apparently the strongest and most durable form of skate which has ever been manufactured. Fig. 1 is a perspective view, Fig. 3 an end view, seen from behind, and Fig. 2 a vertical section on the line S S, Fig. 3.

The whole is of cast iron. The skate is manufactured in two halves, A and B, secured together by rivets or by small screw bolts and nuts represented. Suitable attachments D are provided for the straps, and a strong but light curve C forms the toe, as represented. To each half A and B is cast half of the blade, or what is ordinarily termed the iron, *a* and *b*. These latter are chilled at their lower edges, and are accurately ground to the proper bevel before being secured together. The result is an extraordinarily hard, sharp, and very smooth running surface to act on the ice, while the whole construction is in the highest degree serviceable. It should be particularly observed that the method of securing the parts together by bolts and nuts allows of the parts being readily separated to be ground, in case of accident to any portion of the running face, or to remedy the gradual deteroration arising from careless use or use on gritty surfaces, so that the user has no excuse for dull skates. The construction forbids a possibility of the parts becoming loose, an accident of frequent occurrence with the ordinary wooden stocked skate.

This skate is secured by letters patent dated June 2nd, of the present year. For further particulars, address the inventor, R. W. Belson, 16th st., one door below Seybert st., Philadelphia, Pa.

### Crape Shawls.

"In our recent article on the enhanced value of teas, caused by the Chinese war, we stated the probability of prices reaching a still higher mark than rule at present, should the aggressive measures of the English extend to other ports than Canton. With respect to crape shawls, however, an unprecedented rise in the value of the stock here must inevitably take place, whether the Chinese war continues or otherwise, simply from the fact that these delicate productions of the loom and hand labor are made only at Canton, and have never been shipped, like teas, from the northern ports of Fuh-chow-foo and Shanghai.

"Crape shawls are not found in stock like teas, matting, fire-crackers, &c., but are only made to order by the Canton men, in the Quantung Province; and even were the looms restored, the produce could never find safe escort through the disturbed adjacent provinces, involving many months of labor and great risk to find an export to any other outlet than Canton. Canton, as we all know, is virtually destroyed—no foreigners now reside there—no foreign trade is carried on—workmen and their looms are dispersed, and a long and unforseen period of peace and traffic must take place ere the manufacture of crape shawls can be resumed. Under these circumstances we may expect to see them before long attain a value heretofore unrealized. Such is the view of dealers and speculators in crape shawls."

The above is quoted from the New York *Times*. It conveys the idea that crape shawls are exclusively a Chinese manufacture, and that this branch of business has been totally destroyed by the bombardment of Canton. This is not so, however; crape shawls rivaling the finest productions of the Chinese looms in texture, colors, and embroidery, have been manufactured in Europe for thirty years, at least. The city of Paisley has long enjoyed a high reputation for the manufacture of crape as well as all other kinds of beautiful shawls. Chinese silk has somewhat advanced in price since the late war in that country, and for this reason, all fabrics made of this material, have advanced in prices also; but although a shuttle was "never more thrown" in Canton, all our marts could be supplied with crape shawls, if the silk for their production could be obtained. The name—*Canton crape*—has no doubt led the writer of the above paragraph into the error which he has propagated, respecting such shawls being made "only at Canton."

At an audience given by Said Pasha, the Governor of Egypt, to several learned foreigners, they politely uncovered, and being desired to put on their hats, the French Consul remarked, "Your Majesty treats these gentlemen as crowned heads." "Yes," replied Said Pasha "as the crowned heads of science."

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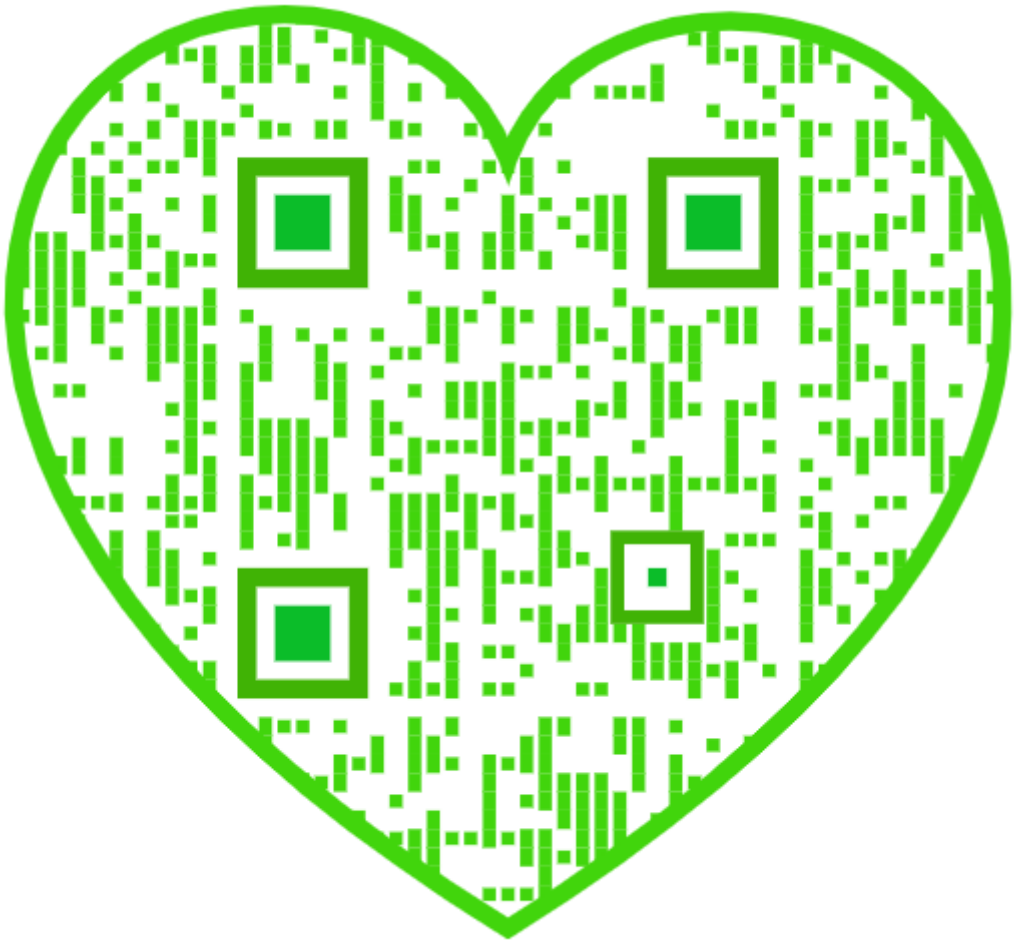

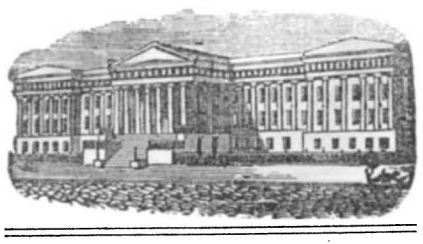

[Reported officially for the Scientific American.]

## LIST OF PATENT CLAIMS

### Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 7, 1857.

MACHINES FOR HUSKING CORN—G. W. Bachman, of Clifton Springs, N. Y.: I claim the grooved cylinder, C, wires (b) and knife F, in combination with the reciprocating screen I, provided with clearing teeth, f, and the reciprocating toothed board, J, the whole being arranged to operate conjointly as shown for the purpose set forth.

[This corn husking machine has a rotating cylinder, with longitudinal grooves in its face, and a knife at one side fastened to the frame. The ears of corn are placed in these grooves, (one in each,) with the butts at the end of the cylinder, and they are kept in place by spring fingers until they rotate and come against the knife, which cuts off the butts; the ears then drop and fall on a screen where the husks are taken off clean by a reciprocating board with teeth on it. This is a very simple and efficient husker.]

METAL SEPARATOR—Edward Borlase, of Bristol, Ct: I claim the use of conical reservoirs, A and B, constructed as described, when arranged in connection with the sieves D, and the whole operated in the manner specified.

TRUSS BRIDGES—Josiah Brown, Jr., of Buffalo, N. Y.: I do not claim broadly furnishing the main or counter braces with gains, and passing them between the timbers of the chords.

But I claim providing each of the main and counter braces with two gains at top and bottom, and each of the timbers of the chord with a gain, at a point where the braces are applied corresponding with the gains in the braces, and passing the braces thus formed up between the timbers, with the gains of the braces in such relation to the gains of the timbers, that when the timbers of the chords are brought together, they are combined, and become as it were only one piece, no part of which can be operated upon or affected independently of the other by the downward and upward thrusts common to truss bridges, even if the bolt which passes laterally through and intersects each set of braces and the timbers of the chord were removed, substantially as and for the purposes set forth.

[These improvements made by Mr. Brown are of such a character as to commend themselves to engineers and others interested in the construction of bridges. They lessen the expense greatly, by avoiding the use of metal shoes, tie rods and arches, while at the same time they produce a perfect system of truss bracing which will render the structure as firm as if such devices were used, and will overcome all liability of the bridge vibrating.]

PASTEBOARD CUTTER—D. Burhaus, of Burlington, Iowa: I claim the employment, in connection with the grooved feed rollers, E F, of a double-edged or V shape cutter I, substantially as set forth.

I also claim the combination of the steadying roller H, with the feed roller F, as and for the purpose described.

[Straight cutters in machines employed for cutting pasteboard to make boxes, pass clear through the material, and leave a rough burr on its edge. The double-edged cutters used in this machine avoid this, each cutter edge only cutting half-way through the pasteboard inwardly, thus leaving a smooth edge. The combination of the feed and stationary rollers gauge the stuff to be cut, and present it to the cutters in a very accurate manner.]

STEERING APPARATUS—D. H. Chamberlain, of West Roxbury, Mass: I claim the nuts N, with their vibrating feathers, q, in combination with the parallel shafts, E, F and G, when the said nuts rest against, and are guided by the middle shaft F, as set forth.

CUTTING BUTTON HOLES—Wm. Chicken, of Boston, Mass.: I claim my improved button hole cutter, constructed substantially as described.

AIR CHAMBER FOR WATER PIPES—Thomas Clark, of Philadelphia, Pa.: I am aware that an elastic medium, in connection with a perforated pipe or head, has been used as a spring to ease the strain on the hose or pipe. This I do not claim,

But I claim the arranging of an elastic or extensible sack or bag in the line of a pipe or water way, when said sack is surrounded with a casing and air chamber for the purpose of effecting an uniform flow of water through pipes.

ALCOHOL BLOW PIPE—Edward Conway, of Dayton, Ohio.: I claim the use of the compound regulator, H I f, of the safety valve, in combination with the tubes, F G, and three way cock, J, of the boiler, all arranged and operating as described, and for the purposes set forth.

[These improvements in the self-acting blow pipe made by Mr. Conway, avoid all danger from explosions, enable a person to regulate with the greatest nicety the amount of pressure through the jet tubes without reducing the size of the inlet orifices of the same, and afford facilities for performing the two processes of soldering and melting at one and the same time by one apparatus in a very expeditious manner.]

GRAIN SEPARATORS—Amasa Curtis, of Lena, Ill: I do not claim the adjustable slats, m, nor the valves, i h, in the fan box, C—that is, separately or in themselves considered, for they or their equivalents have been previously used.

But I claim the auxiliary shoe, D, provided with the adjustable slats, m, in combination with the valves, i h, in the fan box, C, the above parts being arranged as shown for the purpose set forth.

[In this grain separater there is an auxiliary "shoe" provided with adjustable slats, employed in connection with valves applied to the fan-box, by which perfect control is obtained over the blast in directing it to effect perfect separation of the grain from impurities and all foreign substances. This is a very complete arrangement for effecting these objects.]

CORN HARVESTERS—Israel Dodenhoff, of Bloomington, Ill.: I claim, first, The arrangement of the knives, in relation to each other, when combined with the peculiar shape of the teeth for the purposes substantially as set forth.

Second, I claim the armed belt, K, and spring guide bars, L, for holding, guiding and carrying the corn so as to deposit it in the arms of the collector, N, in the rear of the machine, in combination with the cutting apparatus, the whole being arranged in relation to each other, in the manner substantially as set forth.

CUTTING APPARATUS FOR HARVESTERS—Joseph Irwin, of Frankfort, O.: I am aware that spiral cutters have been used before; I am also aware that a continuous spiral bar has been used in combination with stationary cutters, as in the patent of A. Armsden, and I do not claim such devices.

But I claim the spiral cutters, e f, when the same is arranged below, and used in combination with the curved cutting fingers, h h, in the manner and for the purpose set forth.

BOX WINDOW FRAME—J. B. Dodge, of St. Louis, Mo.: I do not claim the balancing of sash by weights, pulleys, and box frame, and therefore I disclaim the original invention thereof.

Nor do I claim the substitution of grooving to form the box for the weights instead of framing, for framing was originally substituted for grooving in window frames to form the box for the weights.

But I claim the employment of the beads commonly used in window frames to hold the sashes to their place to form the box for the weights, using grooves for that purpose on the inside of the jamb and on the underside of the beads placed together, as shown at A, A and B B, forms the box for the weights.

MACHINES FOR HUSKING CORN—Wm. Emery, Jr., of Chester, Ill.: I do not claim separately any of the parts described, as analogous devices most probably have been used.

But I claim the combination of the rotating hub, C, and knife, E, inclined box or trough J, and stripping hooks, o, when the above parts are arranged to operate as shown for the purpose set forth.

[In this husker the nubbins or butts are first cut from the ears of corn by a knife, the ears being placed on ledges on a rotating hub. The ears thus deprived of their butts fall into an inclined slatted trough, where the husks are stripped off by hooks on a revolving shaft which works through the slats. This is a simple husking machine, and not liable to get out of order]

DRY SAND CORES—Wm. Gage and R. B. Felthousen, of Buffalo, N. Y.: We claim the application and use of glue or blood (either separately or in combination) mixed with sand for the purpose of making dry sand cores for founding purposes, substantially as described.

SELF-PRIMING GUN LOCKS—M. J. Gallager, of Savannah, Ga.: I do not claim the cylinder G, the spiral spring E, or the mode of inserting caps or primers in the hammer for self-priming purposes which was invented by N. B. Safford and others.

But I claim the shipper, H, which relieves the sliding rod, C, and allows the firearm to which the improvement is attached to be used with the ordinary percussion cap without exhausting the primers from the cylinder G, or for the convenience of sportsmen as before described, and without which a self-cupping hammer is valueless to sportsmen.

MACHINE FOR TAPPING NUTS—A. B. Glover, of Birmingham, Ct.: I claim, first, Giving the arbor, B', simultaneously with its reciprocating rotary motion, a longitudinal movement back and forth by means of the collar r, placed on the shaft, G, and provided with the spiral groove, g, and inclined or oblique end S, and the bar H, which is placed loosely on the shaft, G, and connected with said collar as described.

Second, I claim the employment or use of the spring, e, placed within the sleeve, d, and the spring, h', placed on the shaft, N, and connected with the arms, g' g', for the purpose of allowing the arbor B' and arms, g g, an independent movement, and thereby preventing any injury which might therwise be produced by any irregularity in the feeding of the blanks within the tap box.

[The arbor in which the tap is secured in this machine is reversed in its motion; the blank is fed into the tap box, and the tap fed to the blanks by automatic movements. Due provision is also made for any irregularity in the operation of the tap. The devices claimed, and their arrangement for the accomplishment of these important objects, are ingenious, simple and effective.]

DEVICE FOR SECURING THE STOCK TO THE GUIDE RODS OF JOINERS' PLOWS—Stephen Going, of New York City: Having thus described my invention, what I claim is securing the stock, C, on the guide rods, B B, by means of the bar, D, fitted within the stock, and actuated by the screw, E, substantially as and for the purpose set set forth.

[In common plow planes the stock and the cutter are not readily adjusted for operating in parallel lines to the set of the gage. In this tool the stock is more easily adjusted, and set to any required line on its guide rods, by a screw actuating and pressing a bar or plate in the stock. The common plows have screws on their guide rods, and are set very slowly; the guide rods of this stock are smooth—the stock can be moved along them at once by the turn of a screw behind, thus relieving the pressure bar. The iron, or cutter, of this plow can also be rapidly adjusted for any cut.]

STRAIGHTENING VENEERS—J. H. Goodell, of Bridgeport, Ct.: I claim the reduction or removal of the curve or scroll shape given the veneer in its cut from the log or stick, by the introduction and feed of it endwise, that is transversely to the general direction of the curve assumed by it in the cut between a roller or rollers and carrying and pressing apron arranged for operation together, and on the veneer substantially as specified.

And I further claim, in combination with the several rollers, A B C D, and endless carrying and pressing apron, H, when the same are relatively arranged as described, the adjustable frame, M, to the one roller, D, to give increased or diminished pressure to the apron, H, against the back of the pressing roller, C, or interposed veneer, as and for the purpose set forth.

WRENCH—J. H. Hathway, of Millbury, Mass.: I do not claim the particular forms or arrangements shown and described.

Neither do I claim a sliding jaw when held by a catch, as such principle of holding it is not new.

But I claim making the ratchet or part corresponding thereto of separate pieces between which the catch enters, substantially as set forth.

I also claim the aforesaid ratchet or series of slips in combination with the stationary and sliding jaws, or their equivalents, when constructed and operating substantially in the manner and for the purposes above set forth.

UPSETTING TIRE—Rockwell Hazen and Volney Gibbs, of Homer, Mich.: We claim the sliding blocks, B B, with knives, g g, attached, and the heads, L L, fitted in slots in the plates, n, to which the blocks B are attached, the inner blocks (k) having knives (p) attached, which knives are actuated by the wedges, L, the above parts being used in connection with the plates, I J and the whole combined, and arranged as described for the purpose set forth, it being understood that we do not claim separately either of the parts described, but the whole when arranged to operate conjointly as specified.

[By this machine for upsetting or bending tires for wheels, straight bars can be upset as well as bent ones, and it is adjustable both for long and short bars. The different devices, as arranged for such purposes, upset the tire rapidly, and in a very superior manner.]

LOCKS—Henry Isham, of New Britain, Ct.: I claim combining with the mechanism for throwing the bolt, or any equivalent therefor, a mechanism which rotates with the said bolt-throwing mechanism, and which by such rotation at the end of the throw of the bolt, interposes its periphery to the line of travel of the bolt or some part of it, and thereby prevents the bolt from being forced back until the bolt-throwing mechanism is brought to the required position for throwing back the bolt, substantially as described.

I also claim the combination of the non-cogged sectors, and the cogged sectors on the key-bit, with the cogs and projections on the tumbler slides substantially as described, or any equivalent therefor, whereby the said slides are controlled by the key-bit as set forth.

And finally, I claim the mode substantially as described of imparting an intermittent motion to the key-bit, and stopping the same while the mechanism which imparts such motion continues to move by means of the wheel and pinion, having their engaging peripheries constructed as described.

BACKING ELECTROTYPE PLATES—A. H. Jocelyn, of New York City: I claim backing shells for printing embossing and like purposes by pressing type or other suitable metal down upon the shell while in a fluid or plastic state, substantially in the manner and for the purpose described and shown.

METALLIC PENS—F. A. Wait, of Philadelphia, Pa.: I claim the arrangement of the spring guard, c, and slots, b, in a pen, a, operating as described and for the purposes set forth.

CONNECTING THE PANELS OF FIELD FENCES—S. F. Jones, of Milford, Ind.: I do not claim the brace and bottom slat and notch, as the same has before been known and used.

But I claim the method of connecting the panels of a field fence, by tongues and grooves, g h, and hook, r r, combined as set forth and shown.

BELT SHIFTER FOR MACHINERY—L. J. Knowles, of Warren, Mass.: I am aware that a device employing a single roller, and arranged to be capable of being canted has been used in combination with guard arms on a belt, for the purpose of preventing the belt changing its position laterally upon the pulley, or for causing the belt to traverse directly over the turning point of the roller frame, and for righting the belt in case it should deviate from the center to either one side or the other of the pulley, and I therefore do not claim such an arrangement, as the same was patented by Samuel Sawyer in 1833.

I claim first, Shifting a belt or band from one pulley to another by means of two rollers capable of vibration, so as to be set slightly oblique, either to the right or left, to a line at right angles with the edge of the belt or band, substantially as set forth.

Second, The peculiar construction of the upper roller G, substantially as and for the purpose set forth.

Third, Having the roller, H, capable of sliding on its axle as it shifts the belt, substantially as and for the purpose set forth.

[This invention is a very ingenious one. It consists of simple and effective means whereby belts of all sizes may be rapidly shifted automatically from one pulley to another by a simple adjustment of the shifter, by hand, or through an expansion tube of a boiler, to a position slightly oblique to the direction in which the belt travels.]

SEWING MACHINES—E. T. Lathbury, of Buffalo, N. Y.: I do not claim the employment of a looper with two fingers or a thumb and finger, as described in the patents of W. H. Johnson and L. Jennings, which fingers, or thumb and finger, operate differently to the fingers of my looper to produce a different stitch.

But I claim the looper composed of two elastic pointed fingers, h i, and operating in combination with the needle so that the needle passes through the looper while the loop is extended upon it, then escapes from it by opening its point as the looper is withdrawn from the loop, substantially as and for the purpose specified.

[The looper in this sewing machine operates in combination with the needle and a single thread, to produce a chain stitch in a certain manner, by which the liability of the needle to miss a loop is obviated. This is the grand point to attain in single thread sewing machines. If a loop is missed, the whole seam of stitches is easily ripped out, but when all the loops are secure in a chain such stitching holds very well.]

CUTTING APPARATUS FOR HARVESTERS—John P. Manny, of Rockford, Ill.: I claim causing a series of cutters to cut from right to left and from left to right, between each pair or set of fingers at every single revolution of said series of cutters upon their shaft or journals, substantially as described.

I also claim, in combination with such series of cutters, the recesses, g, in the sides of the fingers into which they may enter, to enable them to clear themselves from the clogging matter that gathers and accumulates—unless some how prevented—in all harvesting machines as set forth.

PAPER COP TUBES—Alexander McCausland, of Providence, R. I.: I claim the paper cop tube made of a strip of paper of the form represented, in the manner described, whereby greater strength is given to the base of the tube, while the desired conical form is at the same time attained.

RAILROAD CAR STOVE—James Spear, of Philadelphia, Pa.: I am aware that cars have been heated by a current of air caused by their motion, and admitted through the top of the car to a heater inside, but this I do not claim.

But I claim the combination of the cross tube, H, and its self-acting valves, a and b, with the air tube, E, so constructed and arranged as to conduct the external air to the heater when the cars are in rapid motion, either forward or backward, and to prevent the escape of the heated air when there is no descending current, as specified.

GOLD WASHER AND AMALGAMATOR—T. V. Tavnay, of San Francisco, Cal.: I claim in gold washers and amalgamators the metal plates coated with mercury, the riffles, vanes, and re-acting surfaces, arranged and located substantially as described and for the purpose set forth.

SASH LOCK—Marcus P. Norton, of Troy, N. Y.: I do not claim the arrangement of the window sash lock and fastener at or near the middle of the window frame, and upon the jamb casing, or in any other part of said window frame, for the purpose of controlling the upper sash without interference from the lower sash, or for any other purpose.

Nor do I claim two fastenings upon one plate.

Neither do I claim economy of room or a cheap action upon both sashes.

But I claim making a double window sash lock and fastener with an upper and lower branch, a a, which converge and unite into one at or near the knobs, B B, or upper end.

COOKING STOVES—Wm. Resor, of Cincinnati, O.: I claim the described combination with a customary reverting flue cooking stove of the funnel shaped descending flues, d d', enclosing, a reverberatory chamber, E, communicating with the central or reverting flue, g, on one side of a supplemental oven, and with the escape flue, h, on the other side, substantially as described and for the purposes set forth.

SCROLL WHEEL FOR HARVESTERS—C. D. Rogers, of Utica, N. Y.: I do not claim broadly the construction of scroll wheels in two separate parts.

But I claim constructing scroll wheels of harvesters in two separate parts, when both the adjustable portions, D, and main rim, A, are constructed and arranged in the peculiar manner set forth.

AIR HEATING STOVE—Charles B. Sawyer, of Fitchburg, Mass.: I do not claim the hot air pipes, I, hot air flue, F, ventilating flue, G, and air heating chamber, A, provided with cold air pipe, D, for these arranged as shown have been previously used and patented by John Sawyer.

Nor do I claim either of the parts described separately.

But I claim the pipes, K, for the admission of cold air direct into rooms, when said pipes are made to pass through the ventilating chambers, G, for the purpose of creating the necessary draft as described and arranged and used in connection with the hot air pipes, I, and ventilating pipes, J, as shown.

I also claim the chamber, H, placed over the hot air flue, F, and ventilating chamber, G, when arranged relatively with the flue, F, chamber, G, and pipes, a g, as shown, for the purpose specified.

[The object of this invention is to render the air heating and ventilating devices of Mr. Sawyer more perfect in their operation, to enable the occupants of each room in a building with which the heater and ventilator communicates, to regulate the temperature of their respective rooms, and exercise complete control over the ventilation—each room being independent in its regulating action]

SHAFT COUPLING—Edwin F. Shoenberger, of Germantown, Pa.: I claim the combination and arrangement of the levers, D D, with their half roller, E, box, M, clip, G, and slot, H, substantially as described, for the purpose of being applied to shaft couplings for safety, and to prevent rattling.

WHIFFLETREES—David A. Smith, of Washington, D. C.: I claim the lever, G, attached to a movable full crum on plate o, and sliding in slotted plate F, for operating the spring bars, B and B', alternately, as described, and for the purpose set forth.

BIT OR DRILL HOLDER—Amos J. Smith, (assignor to himself and George W. Otis,) of Lynn, Mass.: I claim the described combination of the sliding key or bar, C, and thimble, D, with the spring, E, and stationary catch or protection, F, constructed and operating substantially as described.

EMBOSSING AND PRINTING PRESS—Saml. J. Smith and Charles Lockle, of New York City: We do not claim a raised metallic counter die for embossing.

Neither do we claim gutta percha or other elastic substances for the counter die, because this is well known in various kinds of printing presses. But we are not aware that the metallic counter die, which is necessary for embossing with a hand lever press, has ever before been covered with a thin coating of gutta percha, to cause a perfect impression of the ink from the die simultaneously with the embossing from the metallic counter die.

We claim the arrangement of the inking table, i, die, e, spring, k, roller, g, and its lever, h, substantially as and for the purposes specified.

We claim the raised metallic counter die for embossing when covered with a thin coating of gutta percha, to enable said metallic counter die to give a perfect impression of ink from the embossing die on those parts of the paper that are not raised by the embossing die, simultaneously with said embossing, substantially as specified.

COVERING FOR DRAWING ROLLS—Joseph M. Smith, of Manchester, N. H.: I claim the use of black lead in combination with india rubber, as a material for covering drawing or draft rollers, for the purpose of avoiding the effects of electricity and the adhesion of the cotton to the rollers, as set forth.

MELODEON ATTACHMENT—D. L. Sprague, of Townsend, Vt., and Riley Burditt, of Brattleboro', Vt.: We claim first, The hammers, h, of the harp attachment, arranged between the keys and reeds of the melodeon, and combined substantially as described with the inverted jacks, e, attached to the bottom of the keys, whereby the ordinary keys of the melodeon are made to serve without any extension to play the harp attachment.

Second, The attachment of the string dampers, j, of the harp attachment to the melodeon keys, in a manner to operate substantially as described.

Third, The employment of a bar, G, extending below the whole of the hammers, and operating substantially as described to move all the hammers simultaneously to such a position that the jacks are inoperative upon them.

[This invention consists in employing a harp attach ment in a melodeon. A series of strings, like those of a harp, are played by upon a series of hammers, actuated by the same keys which operate the reeds, so that a reed and a string are played simultaneously, thus producing very bold and sweet tones in unison. The devices for operating the strings and reeds by the same movement of keys are ingenious and simple.]

BRICK MACHINES—Stephen Ustick, of Philadelphia, Pa.: I claim the piston, E', and filling box, E", when connected together as described, in combination with the movable and weighted mold box, G, and lower piston K, when said parts are constructed and arranged to operate in relation to each other in the manner and for the purposes set forth.

FILE CUTTING MACHINE—William Van Anden, of Poughkeepsie, N. Y.: I claim the arrangement of a bed on which the file blank is cut, having a forward positive feed motion, and an independent forward motion against the edge of the chisel, in consequence of the percussion of the hammer, and the difference of the resistance of the metal at the back edge of the chisel, wedging it forward at the time of cutting the teeth of the file, to cause their upsetting, substantially in principle of operation as described.

I also claim the combination and arrangement of the bed on which the file blank is cut, operating in the manner substantially as set forth, with the triangular feed gate and side rails of the machine frame, or substantially their equivalents, for the purposes set forth,

I also claim the combination and arrangement of the ratchet wheel spring and detent pins, or their equivalents, in combination with the pawls for operating the same, for the purposes substantially as set forth.

I also claim the use of the compound self-adjusting chisel holder stock, in combination with the chisel, whereby it is held rigidly in its place under the blow of the hammer, in manner and for the purposes substantially as set forth.

I also claim the use of the triangular gate, as a feed motion to my compound bed, in combination with the apparatus for operating the same, substantially as set forth.

OPERATING RADIAL CUTTERS IN LATHES FOR BEADED WORK—George W. Walton and Henry Edgarton, of Wilmington, Del.: We are aware that cutters for cutting beaded work have been arranged so as to be operated automatically, and a patent was granted to A. H. Brown for a machine having an automatic cutter head We therefore distinctly disclaim all parts on our machine which may be considered equivalent to those of the aforesaid and other machines, intending thereby to limit ourselves to the combination and arrangement of parts shown.

We claim the rotary pattern, K, bent lever, E', arms C' C', connected to the sliding collar, A', in combination with the swinging or oscillating cutter stocks, X X, arranged substantially as described for the purpose specified.

[Beading or similar ornamental turning on wood is executed automatically in this lathe by improved and simple devices, whereby such work is performed with great facility and accuracy.]

APPLYING R. R CAR BRAKES—Ira J. Webber, of Salem, Mass.: I claim the apparatus described, for the purpose of applying railroad car brakes, consisting essentially of the sliding bolt, B, and the dogs, D, or their equivalents, operating in the manner substantially as set forth.

LIFTING JACK—Heber G. Seekins and Chas. H. Goss, of Elyria, O.: We do not claim the application of a wedge for the purpose of supporting the lever.

But we claim the concave and convex surfaces of the wedge, in combination with the concave surface of the upright, for the purpose of equalizing the direction of the pressure, as described.

MACHINES FOR TRIMMING HEDGES—Wm. Wimmer, of Billingsville, Ind.: I claim the duplex arrangement of shears, substantially as described, both sets being actuated from the same driving wheel, and being adapted to trim simultaneously the top and one side of the hedge to any desired uniformity, hight and pitch.

ROCK DRILLING MACHINES—Lemuel P. Jenks (assignor to George A. Gardiner,) of Boston, Mass. Antedated Jan. 7, 1857: I do not claim india rubber springs.

Neither do I claim the use of metallic springs in rock drilling machines.

But I claim the use and application of the india rubber K, when interposed in such manner that its expansive force shall operate the drill in rock drilling machines, substantially as described.

ROCK DRILLING MACHINES—Lemuel P. Jenks, of Boston, Mass, and George A. Gardner, of New York City, (assignors to George A. Gardner, aforesaid): I claim the peculiar combination and arrangement of the devices described, whereby the rotation of the mandrel and drill, as well as the gradual and proper advancement of both drill, mandrel and frame, or either of them, is effected by means of a single eccentric on the cam shaft, B, in the manner and for the purpose set forth.

GAS STOVE—Patrick Mihan, (assignor to Robert B. Fitts,) of Boston, Mass.: I claim the combination and arrangement of the deflector, f, with the conical or tapering cap, b, the gas receiving case, E, and the air passage, e, the whole being substantially in manner, and so as to operate as described.

I also claim the combination and arrangement of the perforated open tube or conductor, G, and the secondary top, H, with the oven, substantially as specified, and so as to operate therewith, and not only improve its baking powers, but render it capable of applying heat to a kettle or other article placed in or on said part or tube, G, as specified.

PUMPS——Henry Pease, (assignor to Eckler, Buswell & Co.) of Brockport, N. Y.: I claim the guide rods, m m, constructed and arranged as described, for the purpose of preventing the rotation of the piston, and of facilitating the attachment and detachment of the shaft to and from the crank, o.

BIT BRACE—Henry W. Porter, of Rothsville, Pa., (assignor to Samuel G. Porter, of West Earl, Pa.: I claim combining the knob, h, with the bit holder J', by means of the auxiliary handle g, whenever it may be necessary

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to bore holes in situations where it is impossible to rotate the bit brace, substantially as set forth.

And in connection therewith I also claim the double ratchet wheels on the spindle, a, when arranged in such manner in relation to the detent, e, as to enable the necessary connections and disconnections to be effected between the bit holder, and the permanent and auxiliary handles of the brace, substantially as set forth.

GAS STOVES—Thomas Watters, of Boston, Mass., (assignor to Stephen Sherlock, of Eastport, Me.): I claim the combination of the main chamber of combustion, B, its air and gas burner or burners, C, and the auxiliary chamber of combustion, D, made to communicate—by one or more passages, F,) with the main chamber B, and having pipes E, extending through the chamber, B, and arranged so that air in passing through the said pipes may be heated by the heated products in the chamber B, as specified.

I also claim the air and gas burner, G, and supply pipes, H, in combination with the main and auxiliary chambers of combustion, B and D, made to communicate with each other, as specified.

I also claim the combination of the reverberating bell or dome, K, with its auxiliary chamber, D, and the main chamber B, when furnished with burners, and connected with one another and the external atmosphere, as specified.

HAY RAKES—S. W. Wood, of Washington, D. C., (assignor to Lewis H. Parsons, of New York City: I claim a hay rake, consisting of a loose revolving tube, c, in combination with a segment wheel, F, placed upon an axle, A, said tube being provided with the teeth, D, of any desired form or material, the whole being arranged and operating in the manner substantially as described.

RE-ISSUES.

CUTTING OUT THE UPPERS OF BOOTS AND SHOES—J. Chilcott and R. Snell, of Brooklyn, N. Y. Patented Sept. 13, 1853. Patented in Belgium, Sept. 16, 1852: We do not claim, generally, the manufacture of boots without crimping.

But we claim cutting, or otherwise making the leather or other material, to form the upper of the boot by folding without crimping of the form substantially as shown in Fig. 4, and having its characteristics herein fully described, whether the said form be produced by a single piece of material, or by the union of two or more pieces

[The fronts of boots have all to be crimped or stretched—if made in one piece—on an instrument made for this purpose. This operation is tedious and laborious, and besides it weakens the leather. It also precludes the use of an inelastic material in boots, such as patent leather, unless the fronts and backs are made of separate pieces. This improvement dispenses with the crimping process, owing to the peculiar form in which the material is cut; and the uppers can be made in one or more pieces, so as to fit the boot to the shape of the foot with perfect accuracy.]

BOMB FOR KILLING WHALES—Nathan Scholfield and Wm. W. Wright, (assignors to Nathan Scholfield,) of Norwich, Conn. Patented March 10, 1857: We claim, first, Inserting the end of the fuse through a short pipe or collar e, and securing it firmly therein, by compressing the same, and driving or forcing this within the end of the fuse pipe, having a conical enlargement at its rear end.

Second, Enlarging the end of the fuse chord, by winding it with twine, or its equivalent, so that it cannot be drawn through the pipe, either with or without the fastening pipe e, and putting gypsum, brimstome, or wax, around it, within the nut A, to hold it securely.

Third, We claim the application of the sliding collar h, on a projectile, carrying a cylindric metallic plate covering the projectile, and either slit, to form wings K, or unslit as a cylinder case, and so constructed that the said collar with the case or wings shall slide to the rear, after being discharged from the gun, either by the action of the spring, or the resistance of the air to guide its direction.

Fourth, We claim so constructing and applying these wings K that they may concide with the cylindric surface of the projectile while in the gun, and that their rear ends may be thrown up therefrom, by their elasticity, after being discharged, so as to stand in positions diverging from that surface in the rear.

Fifth, The application of helical or spiral springs S, on the surface of a projectile, to force to the rear a collar h, (either with or without the guide K,) after leaving the gun substantially as described.

DESIGNS.

STOVE ORNAMENTS—Samuel D. Vose, of Albany, N. Y. Three patents.

STOVES—John C. Smith, of Troy, N. Y., (assignor to W. Resor & Co., of Cincinnati, O.)

STOVES—S. W. Gibbs, (assignor to Rathbone & Co.,) of Albany, N. Y. Three patents.

GRATE OR STOVE FRONTS—John E. Bendix, of New York City, (assignor to S. B. Sexton & Co., of Baltimore, Maryland.

ADDITIONAL IMPROVEMENTS.

WINNOWING MACHINES—Joseph Keech and Stephen Stilwell, of Waterloo, N. Y. Patented June 13, 1854: We do not claim, broadly, the passing of a screen across a blast trunk: but we claim as additional to our patent of June 13, 1854.

The arrangement of the inclined perforated diaphragm S", within the removeable blast trunk C, as and for the purposes set forth.

### Snake Bites.

MESSRS. EDITORS—In the 7th vol. of A. J. Downing's *Horticulturist*, page 188, there is an article on what was then called the "Snake Plant of South America," and if the statements it contains are facts, it is certainly a wonderful plant, and should be more generally known. The best remedy I ever tried for a snake bite was whiskey and red pepper, a table spoon full to half-pint of whiskey, for one dose, to a grown negro man; two doses made him drunk, and cured him. This remedy has been often tried with success, in this region. E. J. C.

Centerville, Miss., July, 1857.

### Renovating Articles of Wearing Apparel.

The art of removing stains from clothes produced by acids, grease, mud, coffee, wine, &c., is denominated scouring. To carry the process to perfection requires not only vast experience, but some practical knowledge of chemistry. Our observations upon this subject must therefore be only received as applicable to the ordinary cases of stained fabric; because so much modification of the process is required to be subservient to the various colors and materials worked upon that nothing but practice can teach.

The commonest marks are grease spots, and to scour them out of silk or satin the best materials to employ are oxgall or pure turpentine. If gall be used, it should be quite fresh, unless it is purified, of which we will speak hereafter. If turpentine be employed, it should be distilled, and perfectly free from resin. The preparation called "scouring drops" is pure turpentine, perfumed with essence of lemons. Either of these substances may be applied with a piece of sponge, or with a remnant of the same material that is being cleaned. When the grease spot is large, the greater part may be removed, in the first instance, by the application of blotting paper and a hot iron.

If the stain upon silk or satin is produced by an acid, such as from fruits, and that upon black or dark colors, the best re-agent is liquid ammonia (strong hartshorn) rubbed in till it disappears. For plain and figured silks, of delicate colors, we cannot give a general applicant, and therefore leave them to be operated upon by the professed *degraisseurs*. To obliterate grease spots from white silk or satin, we may proceed as directed for colored silks; but fruit, ink and glove marks require a different treatment. These marks are generally removed by damping the part with oxalic acid dissolved in water; about the eighth part of an ounce in a wine-glassful of water is strong enough. The common salts of lemons in water also answers well. Coffee stains, mud spiashes, &c., will mostly give way to the use of soap and water. Curd soap should be applied for this purpose.

For grease spots upon cloth and all kinds of woolen goods, soap and water may be used without fear, provided it is well washed out afterwards. Fuller's earth, or powdered French chalk, made into a paste with water, and laid upon the part, is however the best applicant, to be brushed out when dry.

Paint marks are removed with turpentine, the smell of which may be quickly dissipated by hanging the article upon a line in the air.

The clarified bile, or gall, as it is termed, of the ox is invaluable to painters in water-colors: it not only increases the brilliancy and durability of the colors, but makes them spread better upon paper, and especially ivory. When purified it is also much used by scourers for renovating the delicate colored silks and satins. In its natural state it contains greenish coloring matter, and is then only applicable for restoring the brightness of dark materials. It is discolored thus:—Take one pint of gall; boil and skim it; then divide into two parts; to one half pint add half an ounce of salt, to the other add half an ounce of powdered alum; each part is to be heated till the additions are dissolved; then pour into separate bottles, and allow them to stand and clear (in a quiet place) for a month or eight weeks, even longer if not bright. The clear portions of both are then to be poured gently off the sediments and mixed together; the coloring matter coagulates and falls, from which the transparent gall is finally separated by filtering through blotting paper. In this state it will keep any length of time with its qualities unimpaired, and free from odor. S. PIESSE.

### Fermented Bread.

The following are a few extracts from a work recently published in England called "Acton's English Bread Book." They are sensible and instructive, and are worthy of consideration by all those who eat fermented bread in any country:—

*Wholesome and Unwholesome Bread.*—Whether it be made with wheat flour or meal only, or with a portion of sound floury potatoes, or of well-cooked rice, bread will be perfectly wholesome, provided it be sweet, light, and thoroughly baked, though it will be more or less nutritious. This will be the case also if it be composed in part of rye, or Indian corn meal, or oatmeal, or even of barley meal, unless it should be for very delicate eaters, to whom the Indian corn meal and barley are not so entirely adapted as flour or wheat. Hot, or quite new bread, is exceedingly unwholesome. Heavy bread is dangerously so. That which has become sour, either from having been over-fermented in the making, or from having been ill-managed afterwards, is very objectionable, and mouldy bread also is unfit for food.

*The Tests of well-made Bread.*—Good bread will feel *light in the hand* when lifted, which will not be the case with that which has been imperfectly kneaded. Good bread when cut will resemble a fine sponge of uniform texture, and be equally free from the spaces caused by large air-bubbles, and from the dark streaks which show either that it has been inattentively prepared, or too heavily kneaded when it was made up for the oven. The loaves also of well-made and well-baked bread will retain their shape, and not spread about into unsightly forms, as they will when the dough has been rendered too moist. They will also be equally browned, but not dark-colored, and the crust will be firm and crisp, without being thick and hard. Loaves which have been carelessly baked are sometimes burned in one part, while the dough is scarcely set in another.

*Cleanliness in Breadmaking.*—If instead of being satisfied with the aspect of the loaves exhibited in the windows of the bakers' shops, we were to descend into the offices where they are made, and witness the want of cleanliness and wholesomeness which attend their fabrication; could see here a reservoir of water *which is never changed*, there supplies of flour exposed to the influence of an impure atmosphere, either too damp or over-heated; and above all, sickly, perspiring men in contact with our food, we should turn away with a very legitimate feeling of disgust. These are revolting pictures, but they are true; yet much which repels us in them is beyond the control of the bakers themselves, arising from the want of space, and fitting accommodation for the trade they follow. How can the air of the ill-ventilated underground premises in which their operations are carried on generally in populous or crowded cities be otherwise than most unhealthy, foul, destructive to the men employed in them, and having the worst effects on the food which they prepare? No article of our nourishment requires more scrupulous nicety in everything connected with its fabrication than bread. Its value—which cannot well be over-estimated—is *dependent on its purity*; and this can be preserved (even when it is composed of *genuine* ingredients) only by the utmost *cleanliness* in all the details of its preparation, and the absence of every unwholesome influence in the locality where it is effected.

### Black on Wool.

The *London Engineer* describes a new process for dying black on wool, by Mr. A. Neunheffer. It is conducted as follows:—Into a vessel (boiler) containing boiling water, add 1.75 kilograms (a kilogram is 2lbs. 3oz. 5 dr.) of the tartrate of potash (crude tartar) 1.75 kilograms of the bi-chromate of potash; 0.75 sulphate of copper, and 0.75 sulphuric acid. The woolen yarn or cloth to be colored is allowed to boil in this mordant for an hour and a half; then it is taken out, cooled in the air, rinsed in cold water, and is fit for the next operation. Into another bath of clean boiling water, twelve kilograms of logwood and one of fustic are added and boiled for an hour. The cloth or yarn is then boiled in the clean liquor (the chips having been removed) for three-quarters of an hour, when it acquires a deep and durable jet-black shade.

This quantity of chemicals will color 60 kilograms of cloth or wool. It is quite a common process to dye black on woolen cloth, by using the chromate of potash, and crude tartar only, for the mordant, the rest of the process being nearly similar to that given above.

It is not stated what the superior results (if any) are, which are obtained, by the use of the sulphate of copper and sulphuric acid. The old method of coloring black on wool, was by the use of the sulphate of iron and copper.

In all dying operations, electricity, no doubt, plays an important part. If woolen cloth be boiled in a strong decoction of logwood, without a mordant, it will not be colored black.

In all likelihood, the fibres of the wool become polarized by the preparatory process, and they acquire an electric affinity, for attracting the coloring matter held in the solution, and thus forms a new chemical compound, which adheres firmly to the wool upon the same principle that metals are deposited by or precipitated on metalic surfaces, in the art of electrotyping.

### Improvements in Drying Glue.

In the manufacture of glue, large drying sheds are employed, in which the glue in thin cakes is exposed on netting to a current of air, flowing through the slats or grating, Glue manufactories are very conspicuous constructions, on account of their long drying sheds; some of which are over four hundred feet long. During damp, warm weather, this method of drying glue, is very precarious the glue being liable to rot, and spoil, because it is a very putrescent substance. A patent has recently been taken out in England by E. Tucker, of Belfast, Ireland, for an improvement on the old air-drying method. The new process is simple; instead of first running the boiled glue from the kettle into wooden troughs, as in the old process, then drying it on suspended nets in the air, he runs the glue into small thin drying pans, and disposes these on racks in a stove room or heated chamber. In its liquid state, in these pans, the glue is subjected to a heat of from 140° to 160° Fah., and at the same time, while the pans are thus heated, thorough ventilation is going on, either by fans or blowers, so as to evaporate all the moisture from the glue very rapidly. By this method, it is stated that the glue is more effectively and more rapidly dried than by the old process, and large sheds are not required for the purpose. The fuel for heating the stove room and the mechanical power required for operating the fans are extra expenses, as compared with the air-drying process; but on the other hand, less labor is necessary in attending the glue in drying, and there is not that liability to loss, by putrification, so that on the whole, the process appears to be an economical improvement.

### Alumina in Purifying Sugar.

Alumina unites with coloring substances forming combinations known to painters by the name of *lakes*. The alumina used in their preparation, unites with coloring matters held in solution, and forms a precipitate, thus purifying the water of its coloring ingredients. The office thus performed by alumina has been applied by M. Mene, chemist, of Creusen, Germany, to the purification of sugar syrups, for which animal charcoal is now exclusively used. He takes a solution of alum, and decomposes it with a solution of carbonate of soda, then washes the precipitate in a filter, and allows it to dry; this is the substance which he employs to decolorize sugar syrups. One quart of molasses in water was discolored with seven grains of this alumina preparation; it required 125 grains of animal charcoal to produce a like effect with a similar quantity of molasses. Sugar syrup is decolorized by making it to flow very slowly through animal charcoal, great quantities of which are required for this purpose in sugar refineries. If this preparation of alum proves to be only of equal purifying power to the charcoal—all other things being equal—it will be a useful improvement in sugar refining.

### Stand for Umbrellas in Carriages.

A patent has been issued to C. H. Dilke, of London, Eng., for a peculiar stand for holding umbrellas in railroad carriages. To the door of the carriage, he applies two studs, and the stand is slotted to fasten on to them. The sides of this stand are bevelled off so as not to incommodate passengers; it is made of galvanized iron, and perforated at the bottom, so that the drippings from the umbrellas may escape from it by an outlet to the outside, and thus preserve the floor of the car dry in rainy weather.

### Sun Stroke.

This is the season for *coup de soliel*, or sun stroke. A cotemporary recommends to laborers in the sun, the employment of coarse palm leaf hats, with a moist sponge in the top. We believe that very nearly as efficient protection may be obtained by filling the top of the hat with cotton, as is practiced in some localities. It has been affirmed that no one was ever known to be affected with these fits who wore a thick bat of cotton over his head. A remedy so simple deserves to be generally known.

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# New Inventions.

### Electric Signals for Railroads.

The description of a new system of telegraph for railroads, devised by L. Solomons, of Savannah, Ga., has been furnished to the Washington *Union* by J. B. True, telegraphic engineer. These signals consist of lanterns placed at intervals of five or ten miles along the whole line of the road. The sides of the lanterns parallel with the road are closed so as to exclude the light. Revolving shades governed by an electrical current alternately shut off the light from the lamps or allow it to be reflected up or down the road. A single wire connects these revolving shades in a series of telegraphic circuits, which are completed only when an additional wheel, attached to a locomotive for the purpose, passes over a lever which is fixed with necessary insulation on the track near each signal lamp. As soon as this wheel presses on a lever its further end is thrown up, and the point of contact completes a telegraphic circuit of five or ten miles, and makes a magnet of a coil of wire, which moving or changing the position of the revolving shades, exposes the light of the lamp five or ten miles ahead, and warns engineers on trains moving in counter directions that they must go forward cautiously, if at all. When the train reaches the next signal lamp the wheel again depresses a second lever, which by a like operation closes the shade at the starting point or depot, opens at the second signal lamp, and also at the lamp five or ten miles in advance. The lights thus opened disclose the fact to one engineer that another train is within the section over which the light is shed, while the absence of light notifies him that the track is clear. During the day the same effect is produced upon the shades, and the same warning given, which engineers may as plainly learn from the position of the shades as they could from the light of the lamps at night. The shades stand upright when the track is clear, and lay horizontally when there is a train on the section to be passed.

This system of railroad signalizing, it appears to us, must be somewhat expensive to operate, as an electro-magnet is required for each signal, and a very powerful battery must therefore be used. The plan, however, is perfectly practicable.

### Improved Flour Packer.

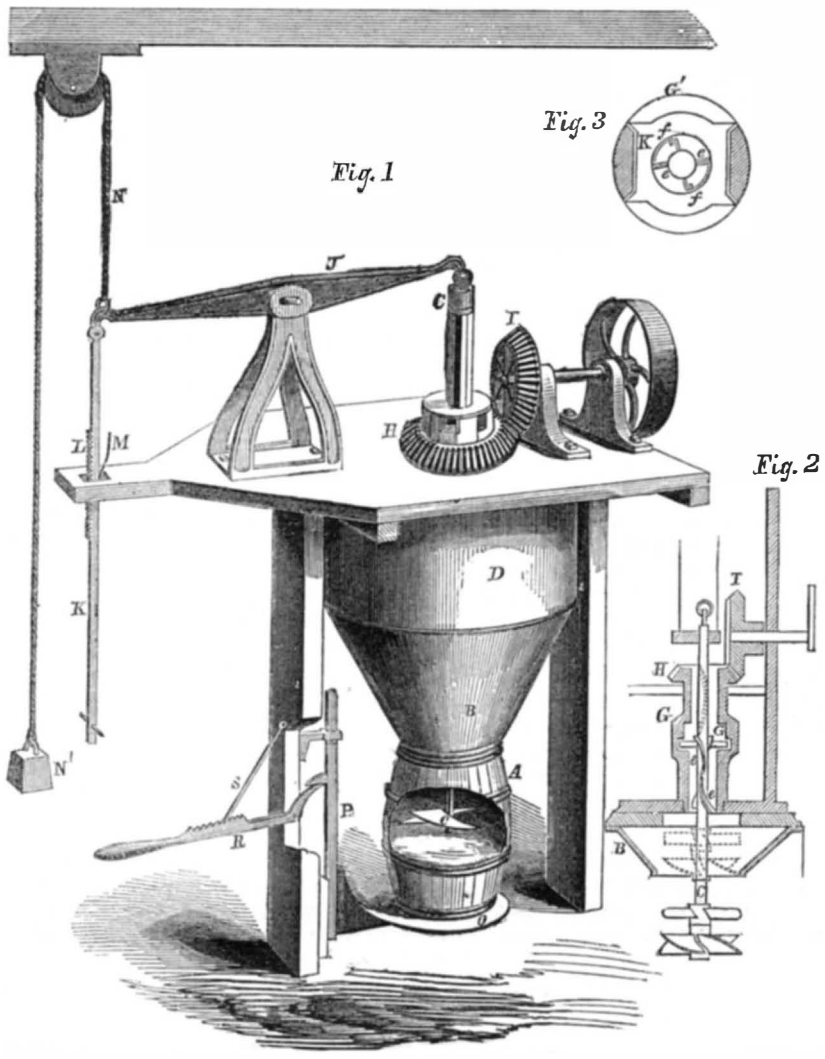
The accompanying engraving represents a machine invented by Samuel Taggart, for compressing flour in barrels, an imperfect form of which has before appeared in our columns. Like most or all the flour packers which have been at all successful in practice, the compressing is performed by a broad thin bladed screw, analogous to the screw propeller employed on steam vessels. The peculiarity relates to the method of operating this device.

Fig. 1 is a perspective view, Fig. 2 a vertical section, and Fig. 3 a horizontal section of the principal parts. A is the barrel to be filled, represented as broken at the side, in order to show the interior. B is a conical base of the feeding trough, and D is a cylindrical portion or reservoir to contain the flour. This portion may be larger or smaller than represented, and may be of any hight desired, so long as the shaft C, connected to the thin bladed screw is of sufficient length to extend through it.

On the shaft C is fixed, at a proper elevation, four screw threads, represented in Fig. 2 by *e e*. The shaft C at this part, is enclosed in a stout sleeve G of cast iron, within which there is liberty for the enclosed casting K to slide vertically, to a small extent. From the interior of K project points *f f*, which act on the threads *e e*. At the top of the sleeve G is a bevel gear wheel H, which receives motion from a vertical bevel wheel I, driven by any convenient power. The bevel wheel I revolves continuously, as also does the sleeve G, and the interior casting K. The threads *e e* are so located on the shaft C as to receive motion from the points *f f*, only while the screw C is below the mouth of B.

The vertical shaft C, if of any considerable length, necessarily presses downwards on the screw C, with considerable weight. To raise it, when necessary, the lever J is mounted in suitable bearings above, and provided with a rod and transverse handle passing downwards through an aperture in the floor, and provided with the rack L and the spring M, to enable it to hold in any position where it may be left. It is desirable that the screw C, when in action, be pressed down with considerable force, in order suitably to compress the fine material, and the screw and shaft C, when in action, are allowed to rise only in proportion as the flour below becomes compressed sufficiently to sustain it. As it may be desirable to add somewhat to the weight of C, the rope N is attached to J as represented, and passing over a pully, sustains, at its other extremity, the weight N′. The gravity, then, of N′ con-

## TAGGART'S FLOUR PACKER.




tributes, with the gravity of C, to compress the flour.

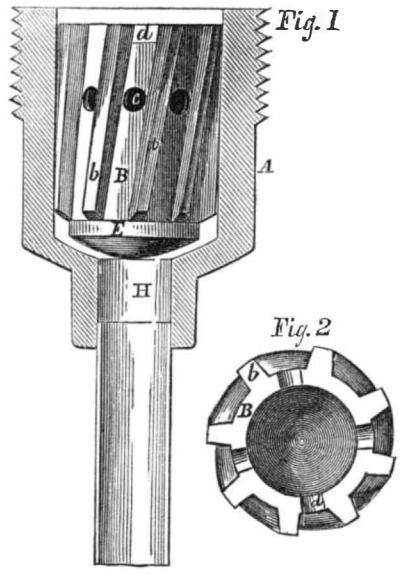
The barrel A rests on a platform O, which is capable of vertical movement by connection with the vertical rod P, as represented. R is a lever capable of being worked by hand, to raise or lower P. S is a pawl, hinged to the framing, and allowed to catch, at pleasure, in the rack represented on R. By means of this apparatus, the platform O may be very readily lowered, the barrel A removed, an empty barrel supplied in its place, and the whole again raised into tight contact with B as represented. This flour packer was patented Feb. 20th, 1855, and was awarded diplomas as the "best flour packer" by both the State Fair of Indiana and the Fair of the American Institute in 1856.

For further information, the patentee may be addressed, S. Taggart, Indianapolis, Ind.

### Bradley's Puppet Valve.

A valve is one of those mechanical devices which is exceeding simple in theory, but difficult to make absolutely perfect in practice. Self-acting valves are usually constructed either in the form of a flap, to turn on a hinge, or of a ball, to move at pleasure within a cage, or of a puppet, to jump vertically. The last named form is very popular for pumps or other apparatus working at very high pressures; but it has always been found quite difficult to guide and control such valves perfectly, especially one of small size, and still more difficult to make them fit tightly to their seats, after having been for some time in use.

To ensure the tight fitting of puppet valves to their seats, or rather, to prevent the gradual wearing of channels across where there should be tight surfaces, complex inventions have been introduced or proposed, at various times to gave a slight rotary motion to the valve at, each lift. The invention represented in the accompanying engravings is designed to perform this automatically, and is, in short, an admirable method of guiding and revolving puppet valves, in a manner which seems almost entirely to relieve them from the difficulties incident to such constructions. It has been tested in practice, and found very successful under the most severe tests, such as in the pumps of hydraulic presses, under pressures of many hundred pounds per square inch.



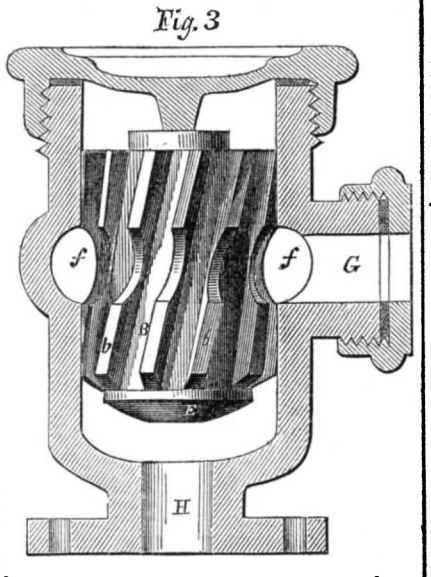




Fig. 1 is a vertical section through the casing alone, Fig. 2 is a plan view of the valve, and Fig. 3 is a vertical section of a casing adapting the valve to a different arrangement of the passages. A represents the casing, and B the main body or cylindrical portion of the valve. E is the lower portion, or accurately finished face, which makes a tight contact with the casing below, so as entirely to stop the aperture H. There are ribs or guides, *b b*, extending along the exterior of B, and making the diameter of the whole valve nearly equal to that of the interior of A. These ribs *b b* extend almost vertically up the sides of B, but are slightly inclined, so as to form portions of spirals, as represented. Across the top of B, which is hollow, are constructed in the form shown in Fig. 1, grooves *d*, and between each of the ribs *b b* are holes *c*. The object of *c* and *d* is to provide perfectly free avenues of escape for the water arising around B, even when the upper surface of B is tightly driven against the cover of the casing.

H receives the water in the ordinary manner: its pressure lifts the whole valve B E from its seat, and allows the water to flow past in the ordinary manner. So soon as the flow through H is stopped, the valve descends by gravity, the action being precisely similar to the ordinary puppet valve, except that the wings B guide it perfectly, and yet almost without friction, in the casing A while the spiral position of *b b*, under the influence of the ascending current of water through the grooves thus provided, rotates the whole valve on its seat, to a greater or less extent, with each motion. All tendency, therefore, to the wearing of a channel across the acting surfaces, in consequence of any very slight leakage, is effectually prevented by this rotation, and the working surfaces are kept perfectly tight.

Fig. 3 shows a similar form, except that the water discharged or drawn through, escapes at the opening G, in the side of the casing, rather than the top. To facilitate the discharge through G, the ribs *b* are nearly or quite removed along their central portion, as represented, and a corresponding semicircular groove is constructed in the interior casing, so that both together form a liberal passage *f*, through which the water or other fluid may circulate. The action is, in every respect, similar to the more common form, in Fig. 1, except that the discharge is at the side.

This valve is the invention of R. P. Bradley, of Cuyahoga Falls, Ohio, from whom any further information may be obtained. It was patented October 28th, 1856.

### Notice to Inventors.

Within the past three weeks, about fifty patents have been issued to inventors whose specifications and drawings were prepared at the Scientific American Patent Agency. The assistance of this Agency is sought for from all parts of the country; and we feel justified in asserting that if a case has any chance at all for a patent, we can secure it. Through our Washington office, we are prosecuting rejected applications with great success. We invite inventors who have such cases, to correspond with us in regard to them. So far as our own clients are concerned, we wish it distinctly understood that if their cases are rejected, the reasons will be thoroughly investigated by us at the Patent Office, and a careful report made upon them. They can have no possible reason for consulting any other agent, until we notify them that we cannot succeed.

M. De la Rue, a celebrated manufacturer of envelopes in London, has got an injunction against W. Dickinson, his rival in trade, restraining him from using an envelope-folding machine, on the ground that it is an infringement of De la Rue's patent.

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Scientific American.

NEW YORK, JULY 18, 1857.

### The Sacrifices of Inventors.

A few weeks since, we replied to a contemporary who had disparaged the character of inventors, charging them with imposition, and swindling the public out of an aggregate "annually of millions." Since that period, a circumstance has forcibly brought before our mind, the sacrifices made and the losses sustained by inventors in pursuing their investigations. On a recent visit to the Crystal Palace, in this city, we noticed the large explosive gas engine of Dr. Drake, standing silent and in disarray, a monument of the enthusiasm with which its inventor has pursued the subject for years, losing both time and money. We do not believe it can ever be brought into useful operation, but we do not the less admire the patience with which he has labored to accomplish the object of his day and night dreams.

How few inventions have been struck off by sudden brilliant thoughts! Man is so constituted that he is compelled to constant study and labor, in order to obtain excellence in any science or art; it seems to be part of his nature to find his way to success only through numerous mistakes.

It is a good thing for the world, that we have inventors (we use this term in its widest sense) possessing that spirit of enthusiasm, in pursuing subjects to make discoveries and improvements, which enables them to go on with indomitable courage, under repeated failures, until they have triumphed over innumerable difficulties. Were it not for such men, our advance in civilization would be small indeed. It is only through success that inventors obtain rewards, and the sacrifices which they sustain in endeavors to achieve success, cannot be estimated in dollars and cents.

The public know but little about the numberless experiments which inventors make in working out their conceptions into practice —their very blunders are valuable to the world. Thus, one inventor will investigate a subject and pursue it under many disappointments, and at last fail of entire success; but another hearing of his experiments, becomes excited thereby, and takes up the subject where the former left off; he advances it a few steps further, and gives it up also. A subsequent inventor hearing of his efforts, then takes up the matter where the others left it, examines it carefully, sees the difficulties that baffled his predecessors, removes them, completes the invention, and it goes forth an apostle of civilization. The majority of the most improved and useful machines now in successful operation are the works of several minds, one inventor having added an improvement here and another there, until they stood forth perfect and complete. Patrick Miller, who made early experiments with steamboats in 1789, spent $150,000, for which he never received a fraction in return; but we have no doubt that at the present day we reap some benefits from his expenditures, as they directed the attention of Fulton, who was then in Europe, to the subject. And how was it with Whitney who gave that most valuable invention—the Cotton Gin—to his country? Garnet Andrews, of Washington, Ga., in a letter to the *Southern Cultivator*, of this month, says:—"I understand from good authority that Whitney died poor. * * * Such men are the true benefactors of mankind. Where is the score of statesmen and warriors, mentioned in the history of Georgia, whose services are to be mentioned in comparison with these mechanics?"

At the present day, there are more opportunities, we are happy to say, for inventors being rewarded, than in days past and gone; nevertheless, many—perhaps the majority of inventors — always keep poor for the benefit of everybody but themselves. No sooner has one of these completed an improvement, than another object presents itself to his mind, requiring improvement also. His energies are aroused, and on he goes making experiments, and spending all the money he had previously made, in perfecting it. It is thus that invention after invention comes forth from the fertile and enthusiastic minds of inventors, not so much for their own good as the benefit of others.

### Vulcanized India Rubber Belting.

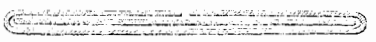
It is now about eighteen years since we saw the first samples of india rubber belting as a substitute for leather in driving machinery. They proved to be very inferior, and thus the article was brought into disrepute for such purposes, and those who had tried it, came to the conclusion that "there was nothing like leather" after all.

We venture the statement that one year ago there was not five hundred dollars' worth of india rubber belting in use in the city of New York; but a change has come over the face of things since that time. Within the past ten months, many thousand dollars' worth of improved rubber belting has been put up, and with such success that in some establishments where it has been fairly tested, it is replacing leather belts as fast as the latter are worn out. From information which we have personally collected on the subject, it appears to us that this material is yet destined to effect an economic revolution in driving machinery. In the extensive establishment of Burr & Co., in Cliff street, this city, where the manufacture of hat-bodies is carried on, and where an immense amount of belting is used, it has taken the place of leather on nearly all the work. We instance this case because the machinery in this manufactory is such as to afford a signal test of the quality of belting. One long india rubber belt, eight-ply, and thirty-six inches wide, is employed to transmit the power from a fly-wheel of two horizontal steam engines of 100 horse-power each. Another of the same material, 100 feet long, seven-ply, and eighteen inches wide, transmits power from a pair of engines, each 150 horse-power, to drive the printing presses in the establishment of J. Gray, on Frankfort street. This belt runs out doors, and has been in use for three months. A belt twenty inches wide, for driving intermediate shafting, has been in use for twelve months, and it appears to be nearly as good as new. Performing the same work, a leather belt of the best quality only lasted six months.

The fan-blowers of the "forming machines" at Burr's, and those for teasing and cleansing the fur, are driven at the high velocities of from 3,000 to 3,500 revolutions per minute. This speed wore out the best leather belts faster than those of india rubber which have supplanted them.

India rubber belting has been for some time used for driving the presses on which the Scientific American is printed, and has proved superior in every respect to the leather belts previously employed. It also possesses the qualities of running unaffected under exposure to water, to the open air, and even to a temperature above the boiling point. A five-ply india rubber belt, twelve inches wide, as now manufactured, is considered equal to a double leather belt of the same width. The price of the latter per foot of length is $2·20, while that of the india rubber is only $1·04, and so on for different widths in the same ratio.

The new variety of india rubber belting to which we have referred is manufactured by the New York Belting and Packing Company, No. 6 Dey street, this city, at their factory at Newtown, Conn. The cotton duck which gives the peculiarly uniform and non-elastic character to such material is woven specially for this purpose, with the warp much stronger than the filling, and cut by machinery into strips of a perfectly regular width. Single strips of this duck will bear a tensile strain of 125 pounds for each inch of width. These are coated on both sides with the rubber composition under the pressure of heavy calenders, and then laid together and pressed again, to make the thickness required. The manner of laying this material, and to which is due much of the superiority of the modern article, is shown in the accompanying figure, the lower strip being cut of twice the width of the other or others, and the edges folded over, so that they butt together in a line along the middle of the belt. This line is subsequently covered with a thin strip of rubber, and the whole belt subjected to a very heavy calendering, which effectually welds



the parts. A subsequent vulcanization, or exposure to a high steam heat for six or eight hours removes the liability to be affected by any temperature less than some 250 degrees. The company are manufacturing the belting on a large scale, and guaranteeing each belt in a fair trial for six months.

### Locomotive Building.

The locomotive engine has been forcibly termed by some the greatest and most successful effort of mechanical engineering ever yet produced; and whether we look at the difficulties incident to the task, at its great perfection and also its great complexity as now constructed, its immense power in a small compass, the great expense involved in both its construction and maintainance, the overwhelmingly greater aid it has afforded to the productive industry of the world, the social happiness it has augmented, the knowledge it has diffused, or the peace of nations which it has promoted by the increased intercourse of the people; it cannot but be regarded as a machine of most extraordinary importance, and one the development and improvement of which cannot attract too much attention.

We have about 27,000 miles of railroad in the United States, and about 9,000 locomotives thereon; Great Britain has about 8,000 miles of road, with about 3,500 locomotives, each country having an average of one locomotive to about every three miles. France has about 1,500, and all the rest of the world about 1,500 more of these powerful monsters. Although a considerable proportion are always lying up for repairs, or standing idle awaiting their turn to act, the total number which, as we write, are striding furiously but smoothly along on their iron tracks, must approximate to 4,000.

Two leading manufacturers in England have completed each a thousand locomotives. We have no shops in this country so long established, nor counting, we think, so large a number; but Rogers, Ketchum & Grosvenor, at Paterson, N. J., turn out nine each month of very superior machines, even during the present depressed condition of the business; and there are several other builders which turn out each about two per week, or 100 per year; and the improvement, or rather the *change* in the style of these machines is so rapid and constant, and the various characters of their work, and taste or whims of the parties ordering them, are so variable, that scarcely any ten in the whole world are alike.

From a recent general survey of locomotive building, in *Holly's Railroad Advocate*, it appears that this branch of manufacture is now by no means the best investment of capital and skill in this country. A few years ago, while money was plenty and railroads rapidly extending, the locomotive business was unprecedentedly good, the established shops were crowded, and making money and making locomotives, were almost synonymous terms. As a natural result, there sprang up in the East, the West and the South, a *multitude* of locomotive shops, including in fact almost every machine builder, whose tools were adapted to the work.

But the increase of railroads was checked by a lack of ease in the money market, by lack of economy in the management of roads and by the reaction of an unduly inflated interest in an enterprise which, like many others, is legitimately of slow development. Hence locomotives were no longer bought in large quantities with cash, but on long credits and with in some cases precarious securities. This kind of pay rendered it difficult for any but houses of ample capital or of established reputation to succeed. Yet a few of the new establishments commenced with a talent and capital which enables them at this day to rank among the first.

A third era has now commenced. The business is again improved, and will pay those who have talent and capital invested; but if the demand and pay for work are greatly increased, of course it may be overdone again.

### Our City.

People residing out of New York, unaccustomed to its bustle and excitement, would very naturally conclude, from a perusal of the daily prints for a few weeks past, that its inhabitants are about the greatest set of ruffians in the world. It cannot be seriously disputed that our city government is very corrupt. Things about our various departments are loosely and selfishly managed; and unless those in charge are absolutely opposed to stealing—from pure principle—more or less of the vast streams of money which run through these various city mills, will lodge, on its way down to the receiving till, or be like the gold in the San Francisco Mint, so volatile, that it goes up the chimney in spite of the honest assayer.

Even now, amidst our political convulsions, riots and conflicts between the powers that are and the powers that would still like to be —the great business arteries are unclogged— and the industrious mechanic, the energetic merchant, and the upright citizen, are all moving along, not unconcerned, but actually not disturbed in their business by the broils and battles which seem constantly brewing at or near the City Hall, to the disgrace of our boasted law and order proclivities. Such things make good men ashamed; but it is not necessary, even now, to attempt to vindicate the good name which properly belongs to a large portion of our mercantile and professional citizens. In simple truth, they have no lot or part in this disgraceful state of things. They are at their legitimate business, and the struggle now going on is simply between two rival political parties—brought about by the actual corruptions which are known to exist in the government of this much abused city.

In spite of stagnant pools and decaying vegetables, which exhale their foul odors in some of the lower quarters of the city, the general health of the people is unusually good. Our noble rivers of pure water, washing each side of the Metropolis; our principal streets, clean and well regulated, together with the Croton water and the Rockland Ice, all tend to preserve the proper equilibrium and attract the stranger even at this season to visit our city on a tour of pleasure.

### Fair of the American Institute.

The next or twenty-ninth Annual Fair of the above Institute will be held in the Crystal Palace, this city, commencing on the 15th of September next, and continue open until the 28th of October. The building will be opened for the reception of articles from Monday, 7th, till the 15th September, but heavy goods from a distance will now be received, and stored in the Palace until the opening of the exhibition. Fifteen principal railroad and six steamboat companies, have consented to return, free of freight charge, articles from distant places exhibited at the Fair. The managers promise that they will use their best efforts to secure a first-rate exhibition, and are now making preparations for increasing the facilities for operating the machinery. Inventors, mechanics, manufacturers and farmers from all parts of our country are invited to become exhibitors. The managers also promise to the public that practical and disinterested judges will be appointed to examine and report on all articles on exhibition; and, in order that justice may be done, they have resolved that should any exhibitor be dissatisfied with the award, an appeal may be made to the Board of Managers, and should it be entertained, the subject will be referred to the Committee on Manufactures, Science and Arts, who will re-examine the article, and their decision will be final.

Persons desiring to become exhibitors will receive a copy of the rules and regulations, with all required information, by addressing W. B. Leonard, Esq., Corresponding Secretary. We hope that all articles intended for the exhibition will be in full working order, and in place, on the very day the Fair is opened to the public. Not an article should be received after that period.

In the *Repertoire de Pharmacie*, M. Leperdriel advises to conceal the disagreeable taste of cod-liver oil by the addition of about ten per cent. of common salt. Not only does the salt render the oil palatable, but it causes the stomach to digest the oil more completely.

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### Progress of the Atlantic Telegraph Cable.

The British steamer *Cyclops* has sounded the ocean road from Ireland to St. Johns, N. F., and found it to be as reported by Capt. Berryman, who took the soundings in the United States steamer *Arctic*, last year, but the water is proved to be still deeper on the Newfoundland shore, which fact is the more favorable to the enterprise. The *Cyclops* has returned, sounding a second time across the ocean.

The correspondent of the *Herald*, writing from Southampton under date June 16, says the U. S. frigate *Niagara* would leave that port on Saturday, the 20th, for Liverpool, where she will take her part of the cable on board. The preparations for its reception have employed about one hundred and fifty men, night and day, since the arrival of the vessel at Portsmouth, and everything has been done that could be done to hasten her departure.

By the last news from Birkenhead it appears that the two vessels which have been employed in taking in the cable preparatory to placing it on board the *Niagara*, are at present engaged at the factory wharf receiving it for that purpose. Each of these will be loaded with about three hundred miles, or one-fourth of the whole, and the coiling from both will proceed at the same time, so that the process of freighting the *Niagara* in the manner described will not consume more than two-thirds of the time which was originally supposed, or from three to four weeks altogether. The *Agamemnon* was to have commenced taking in the cable on the 15th, but as the arrangements for its reception are not completed, it was hardly probable that they would begin before the 22nd, about the time the *Niagara* would have reached Liverpool. As the forming of two coils can be carried on in the latter at the same time, it will not require as long by from one to two weeks to put her part of the cable on board as will be consumed by the *Agamemnon*, so that she will be lying at Cork eight or ten days longer, that city having been selected as the place of rendezvous for the whole telegraph fleet.

One of the most important parts of the machinery which is required in the laying of the cable are the guards for the propellers of the *Agamemnon* and *Niagara*, and without which its successful accomplishment may be defeated. These are absolutely necessary to prevent the fouling of the submarine cable in the event of a ship being obliged to back out of the way of icebergs or from other causes. It is a point to which the greatest attention has very properly been given, as the breaking of the cable, after several hundred miles of it had been paid out, would postpone the completion of the enterprise for some years, in addition to the great pecuniary loss by which such a disaster would be attended It was proposed to avoid such a disaster by surrounding the screw with a cage, which would effectually prevent the cable from coming in contact; but as the two vessels were differently constructed, and as it would be necessary to place the *Niagara* in dry dock before the cage could be fastened on her, it was decided to abandon it in her case, and to adopt a guard in its stead. The cage has, therefore, only been used on the *Agamemnon*, which was docked for the purpose.

The *Niagara* has been fitted with two guards of iron, which sweep around the stern in the form of a semi-circle or horseshoe, enclosing both the propeller and the rudder, the lower being when light about a foot above the water line, and the other at an elevation of some seven or eight feet from it. As the ship will draw three or four feet more when loaded with the cable, the lower guard will, of course, be submerged to a corresponding depth, forming a still better protection when in the process of backing, which, after all, may be entirely avoided. This guard is placed about three feet from the flange of the screw, and between eleven and twelve from the side of the rudder post, so that its full diameter at this point is from twenty-two to twenty-four feet. The length of the perpendicular bars which sustain these guards varies from seven to fourteen feet, and the whole presents so small a surface to the action of the water and is so well fastened with bolts and screws that it is expected to resist all the pressure to which it may be subjected either from the inside or outside.

The engine which is to be employed in the paying out of the cable was to be put on board the *Niagara* in Liverpool. Here also she would receive the rest of the machinery, consisting of the brakes and rollers, which are so essential to the accomplishment of the work. The cable, in its way from the hold over the stern of the ship, passes over some five or six rollers, the brakes being used only when it is to be stopped. All this portion of the machinery was in process of construction at Manchester, but would be completed soon after the *Niagara* had commenced receiving her portion of the cable.

### Death of the Hon. William L. Marcy.

This distinguished statesman died very suddenly on the 4th of July, at Ballston Spa, Saratoga county, N. Y. He had been spending a few days at the Sans Souci Hotel in that village, prior to an intended visit to to Europe with his family, who were absent at the time of his decease. He was found dead in his room, lying on a couch with a book on his breast, and not a muscle of his face was distorted, nor an article of his wearing apparel disarranged. William L. Marcy was three times Governor of New York, and was Secretary of War, and State during the administrations of Presidents Polk and Pierce. He was an able statesman, upright and honorable, and conferred dignity upon every office which he filled. He was seventy-one years of age at the time of his disease, and died regretted not only as a patriot and statesman, but as a man, by all who had the honor of his acquaintance. His funeral took place at Albany, N. Y., on the 8th inst., and was the largest ever witnessed in that city.

### A Snake Removed from a Woman's Stomach.

The Logansport (Ind.) *Pharos* is credited with giving currency to one of the most remarkable triumphs of angling ever performed since the piscatory art was first practised. The feat was nothing else than the removal of a snake from the stomach of a Mrs. E. Ryan, by Dr. Myers, of Logansport, with his patent tapeworm trap illustrated and described on page 384, Vol. 10, Scientific American.

The following is the account given of the transaction:—

Mrs. E. Ryan, of Fort Wayne, about twenty years of age, has been severely afflicted for four years with a sensation in the stomach, as though there was some reptile moving in it. During that time she was treated for various diseases by numerous physicians of skill, and by several for tapeworm. Hearing of Dr. Myers's new process for the removal of parasites from the human stomach, Mrs. R. went to Logansport and placed herself under his charge. Within two weeks Dr. M. removed from her stomach a snake about three and a half feet long, and one and a half inches in diameter, and relieved her of all her suffering, instead of aggravating it, as had been the result of previous treatment she received. During the latter part of her illness she was unable to attend to the domestic care of her family, or even to take care of herself. It required two hours to prepare for retiring at night; an equal time transpired before she could lie down, and often she was deprived of sleep for nights together. Frequently she would walk the floor until exhausted, because unable to lie down without the most excruciating pain. Mrs. Ryan's own words are, that her sufferings were such that she often prayed for death to relieve them. Mrs. R. supposed she swallowed the snake, which was apparently of the water species, while drinking from a spring in the evening at her former residence west of Fort Wayne. She left the care of Dr. M. for home, feeling as though she was saved from worse than death.

### Improved Frictional Bearings.

In the list of claims published in our last number, one embraced an improvement in journal boxes as a new article of manufacture, for which a patent was issued to D. Taylor, of Carbondale, Pa. Since that date, H. A Chambers, agent and conjoint proprietor of the patent, has called at our office to show us one of the new journal boxes. It consists of a cast iron casing or shell lined with bras the two metals being fused together, thus forming a perfectly solid box. The brass lining is cast first, then laid in another mold, and the iron cast around it. As the melting heat of the latter is higher than that of the former metal, a portion of the outside of the brass is fused, and the two metals are thus united and solidified together. A journal box thus formed is afterwards trimmed and finished for use. As iron is not one-fifth the price of brass, cheap solid bearing boxes with brass linings, can thus be manufactured at a comparatively small cost, in comparison with journal boxes made entirely of brass. This excellent improvement is applicable to all frictional surfaces, such as boxes and pistons, that rub in contact with iron or steel, and when the brass is worn out it can be melted from the iron and both metals used over again.

### The Comet.

A contemporary journal has a long and labored article on comets, stating that "the year 1857 has been remarkable for the appearance of a long expected comet, first noticed as early as 1274." We have done our best on a previous occasion to explain this whole "comet" humbug, but may be allowed a brief repetition. There have been but two comets seen this year, both small affairs, which are visible every few years with good telescopes; but the great comet of 1556 which was *supposed by some* to be identical with the great comet of 1274 has not yet appeared, though it has been expected ever since 1848. These are the facts in a nut-shell.

The efforts of would-be wits and the still more excruciating efforts of some would-be philosophers, have muddled the matter until the mass of the community possess but an extremely confused idea of the subject; but when we find in a dignified journal, a two column article, full of facts correctly stated in relation to ancient comets, and adding that, "the excitement attending the appearance of the comet of 1857 has passed away," it is time the writer was respectfully snubbed, and not allowed to "come-it" in future over intelligent readers, without a larger supply, either of sunshine or humor.

### Manufacture of Steel.

A few weeks since we gave a very condensed abstract of a paper read by C. Binks before the British Society of Arts, setting forth the importance of nitrogen in some form as a constituent of steel. As the subject has attracted considerable attention, we may add that the author had not at that date applied his theory to actual manufacturing operations, although he claims to have experimented on quantities large enough to materially sustain his theory.

Assuming that the value of compounds of carbon and nitrogen, instead of carbon alone, in steel-making be acknowledged, he holds that of all such combinations or of elements containing these, it is undoubtedly to the use of the cyanogen compounds that we should resort for all manufacturing purposes; and the time seems not very far distant when these compounds will become some of the most readily obtained and cheapest of chemically manufactured products. Some years ago, Mr. Lewis Thompson pointed out how these could be had through the nitrogen of the atmoshere, and the operations of the blast furnace suggest methods for the production of those compounds that are of the highest practical value. There are at play here all the elements for the production of cyanogen, of certain cyanides, and thence of other compounds, and the requisite conditions can be superadded for securing these for commercial purposes. That cyanogen is formed in certain zones of the furnace was proved by Bunsen and Playfair. Dr. Clark, of Aberdeen, many years ago, examined a saline product that was found to ooze out of the tweer holes of a blast furnace in Scotland, and discovered it to be cyanide of potassium. In several places on the Continent, as at Mariazoll, in Styria, for example, we are told by Gmelin that this product is so abundant as to be sold commercially for galvanic gilding purposes. It is, he claims, the product of cyanogen, when combined with the accumulated proportion of potash contained in the fluxing limestone. But why not, Mr. B. asks, specially add the alkaline element, and combine in the furnace simultaneously the peculiar reducing and converting actions of these compounds with their special manufacture for other and equally valuable industrial applications of them that are springing up?

### Changes in the Variation of the Compass.

It is stated that within the last thirty years the compass has so varied along the coast of Sweden, that the Government have published a new chart, corrected to 1855. At Gothland, in 1834, the variation was fifteen degrees, while it is now only ten degrees thirty minutes. On the coast between Bjaro Blubb and Malorem, it was sixteen degrees in 1833, but is now only one-half that number.

A correspondent informs us that in tracing a meridian line in Kansas that was run by the government surveyors, he finds that it varies about twelve degrees from the pointings of the magnetic needle, and about the same from the sun at noon, and also from the true north pole of the heavens, as indicated by the North Star. We perfectly agree with him that there has either been great carelessness in running these important lines at that locality, or that there is a mystery connected with the allowances for variation which the world at large have little idea of, and which it is highly desirable to have elucidated.

### New Astronomical Instrument.

Mr. Alvan Clark, of Cambridge, Mass., the celebrated astronomical instrument maker, has published a description of a new instrument of his own invention, for measuring the distance apart of stars too distant to be brought into the field of view of a telescope. Within a year from the first thought of the instrument entering his mind, he had built a telescope of six inches aperture, and one hundred and three inches focal length, mounted it equatorially, governing its motion by Bond's spring governor clock, at the College, provided the two eye-pieces, and as a substitute for a filar micrometer, arranged a mode of using pieces of glass ruled with a ruling machine. Experiments have demonstrated the feasibility of using the two eye-pieces in this way, and of obtaining by them very accurate measures of the distances of stars which are from three to one hundred minutes of space apart. The success of the instrument was, however, greatly due to the spring governor which keeps each star upon the wire accurately bisected.

### Car Coupling.

The Baltimore and Ohio Railroad Company continue to employ wooden strips to connect their cars together, so that in case a car or the engine is thrown off the track, the coupling will break, and not drag the others to destruction. The same thing was in use for a long time, and may be still for aught we know, on the Camden and Amboy Railroad. We remember being left behind one dark, stormy night by the breaking of one of these strips. There are, it seems to us, ingenious couplings already patented, which are well adapted to do all that is claimed for the "wooden strips," and they are more reliable for holding the cars together on a regular pull.

### Splitting Logs.

A correspondent sends us a plan of splitting logs by inserting a series of pointed screws driven by power so as each to serve as a wedge, which appears highly practicable, and which he wishes to give the public, in order that some one may, perhaps, proceeding on the hint, produce a highly useful and patentable machine. Such a machine would evidently avoid concussions, and might, we imagine, be made to split wood very rapidly.

### Institute of Architects.

An association has been formed by some of the most prominent architects in this city for the purpose of promoting the scientific and practical perfection of its members, and elevating the standing of the profession. They propose to have regular meetings for the discussion of subjects of professional importance; lectures, designs and models, &c. The title is "The American Institute of Architects."

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E. J. C., of Miss—Wheeler & Wilson's sewing machine is generally preferred for fine work, such as shirts, &c., and Singer's for heavier work, such as sewing strong cloth.

G. C. H., of Philadelphia—We are not acquainted with any person who manufactures small water pressure engines to drive printing presses. If you have sufficient fall, or water pressure, a small turbine wheel will answer your purpose. Write to any of the manufacturers of them who advertise in our columns. You might also write the publishers of the Boston *Traveler*.

F. D., of N. Y.—The idea you suggest to employ air for ladies' skirts instead of hoops is not new. This improvement was recently illustrated in the London *Punch*. The engraving represented a number of young ladies preparing for a ball, each in turn performing the office of "skirt-blower." The idea is a good one, as it renders the subject capable of almost indefinite expansion.

T. V. C., of Ohio.—Good wine can be made of strawberries and currants. Express the juice from them, add to it three times its quantity of water and a pound of sugar to each gallon; then allow the whole to ferment for three days. Now run off the clear liquid into a tight cask, and keep it in a cool cellar for four months, or longer, before using it.

R. H. B., of Mich.—On page 83, Vol. 11, Sci. Am., there is an illustrated description of a new method of extracting silver from lead. It is the best we can recommend to your attention.

J. N. C., of Ala.—The common kind of sumach used here in dyeing and in tanning leather is obtained from Sicily. None of our native sumachs are sold in the market, consequently there is no fixed price for them.

M. V. DeC., of Ga.—Write to Appleton & Co., Broadway, this city, for "Tredgold on the Steam Engine," and Blackie & Son, Fulton street, this city, for D. K. Clarke's work on Railroad Engineering.

W. V. D., of Ky.—Weissenborn's work on Engineering will be superior to the one to which you refer, judging from its early specimens.

H. M. S., of N. Y.—You ask whether the electric fluid runs from one station to another in telegraphing, whether it travels at all, or whether it goes both ways at once? These are intricate and unsettled questions of science. We believe that the electricity travels from station to station.

A. D. C., of Vt.—Last year, some flighty person proposed to us the plan of a balloon which was intended to be in readiness to take a pleasure party from the top of the White Mountains over to Saratoga during the summer, but we never heard of its appearance at either of the above places. We therefore conclude that the scheme turned out to be *all gas*.

R. T. S., of Md.—There is no special work published on horse power machines employed to operate grain threshers.

J. W., of Philadelphia.—We are not personally acquainted with any person in your city to whom we can refer you for selling your Patent Right.

W. S., of Mass.—Steam flying machines are not described in any work, from the fact that no such machine has ever been tried. Small steam engines were built for a flying machine in this city in 1849, but they were never used.

A. P. S., of Ohio.—The fire crackers of commerce are not manufactured in this country. We believe they are made only in China. They are much higher this year than usual owing to the difficulties existing there. It would trouble even an ingenious Yankee to produce them as cheap as they are ordinarily sold in this market.

G. H., of Pa.—"Please answer me the following question in Patent laws:—Suppose A buys the right for a certain Patent for Cumberland county, Pa., is it lawful for B, living in an adjoining county, to come to A in Cumberland county, buy the manufactured article, and take it to the adjoining county and use it?" We answer, it is not. B would be liable to pay for the right to use the article so patented to the owner of the adjoining county.

C. O. M., of Mich—For every gallon of lard oil, use half an ounce of quick lime, put the oil and lime into a vessel heated up to 212 deg., and stir them well for fifteen minutes, then cool down and allow the sediment to settle. Use the clear for lubricating the journals of fine machinery, and you will find that it will not "gum" so readily as before it was thus treated. The sediment may be used for greasing carriage axles.

I. H. N., of Vt.—Minifie's Book on Drawing is an excellent elementary work. The price is $3. Published by W. Minifie, Baltimore, Md.

R. & V., of Va.—We consider the Alum or "Phœnix" safe as by far the most fireproof of any in use. They are made, we think, only in this city.

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Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, July 11, 1857:—

J. G., of Pa., $23; C. K. Jr., of N. Y., $25; H. D., of Mass., $60; L. C. S., of Conn., $25; G. C. T., of Mass., $55; E. L. G., of Conn, $30; F. N., of N. Y., $25; W. M. S., of N. Y., $750; W. W. B., of N. Y., $51; S. V. S., of N. J., $100; M. C. R., of Ohio, $25; S. P. G., of Wis., $30; G. D. L., of N. Y., $35; J. W., of Ky., $55, C. M. L., of N. H., $55; A. O. B., of Ky., $30; J. E. of Ohio, $30; Z. & B., of Mo., $30, G. B. P., of N. Y., $30; G. W. S., of N. Y., $50; J. B., of Ill., $30; E. G., of N. Y., $55; H. O. A., of La., $30; J. S. & Co, of N. Y., $30; N. N., of Ill., $30; L. N. of N. Y., $50; R. P., of Mich., $30; J. C., of Ohio, $25; L. T. & Co., of R. I., $30; A. J. & J. A F., of Vt., $25; S. D. H, of N. H., $20; H. B., of Conn., $25; G. D., of Wis., $25; W. & P., of N. Y., $275; A. D., of N. C., $22; J. L., of Wis., $30, J. P., of Conn., $25; J. B., of Ohio, $30; B. D. S., of Mass., $25; R. H. L., of Pa., $30; W. W., of Mass., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 11, 1857:

L. C. S., of Conn.; J. McM., of N. Y.; W. W. B., of N. Y., (2 cases); C. K., Jr., of N. Y., M. C. R., of Ohio; J. G., of Pa.; A. J. & A. J. F., of Vt.; A. D., of N. C.; G. & W., of Ohio; J. C., of Ohio; G. D., of Wis.; G. C. T., of Mass.; H. D., of Mass.; B. D. S., of Mass,; E. G., of N. Y.; J. P, of Conn.


## IMPORTANT TO INVENTORS.

The rapid growth of our Patent Agency Business, during the past three years, has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we have established a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general care of one of the firm, assisted by experienced Examiners. The Branch Office is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington having business at the Patent Office are cordially invited to call at our office.

A SPECIAL REQUEST.

Our facilities for the speedy preparation of cases previous to the application for the patent being much more extensive in New York than at Washington, we especially require that all letters, models and remittances should be made to our address here.

EXAMINATION OF INVENTIONS.

We have been accustomed from the commencement of our business—twelve years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice freely and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and discription of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step; in all cases before application is made for a patent—not that there will be no rejections under the system. It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a Patent through our Agency are very moderate, and great care is exercised in their preparation. No cases are lost for want of care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for Patents can be had gratis at either of our offices.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard Saint Martin, Paris, and 3 Rue Therrsienne, Brussels. We think we may safely say that three-fourths of all the European Patents secured to American citizens are procured through our agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to inventors. Any one can take a Patent there.

Circulars of information sent free on application.

☞ Remember the SCIENTIFIC AMERICAN PATENT AGENCY, No. 128 Fulton street.

MUNN & COMPANY, Proprietors.

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**PUMPS**—BURNAP'S Patent Excelsior Pumps are acknowledged to be the best and most durable force pumps in use for steamers, factories, breweries, &c. See engraving in No. 34, this Vol. Scientific American.—JEREMIAH CASEY, Agent, No 231 West st., New York. For sale of rights or other information, address BURNAP & BRISTOL, Albany, N. Y. 34 13*

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**WILLIAMS' PATENT AXLE** for Carriages.—Patented May 26, 1857. The proprietors of the above-named patent offer for sale rights to manufacture and use the article for States, counties, and towns. A full description of the patent can be seen in the Scientific American of June 20. For further particulars apply to T. W. WILLIAMS, 5 Forrest Place, or H. T. HOYT, Tenth and Chestnut sts., Philadelphia. 1*

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**THE TEN SOUTHERN STATES**—The right to manufacture and sell a valuable article, (patent issued June 30, 1857,) in the above-named States, is now offered for sale at 393 Broadway, corner Walker street, New York. R. S. JENNINGS, Patentee. 45 4*

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**MANUFACTURERS' TRADE DEPOT**—For supplying merchants at factory prices with patent Fly and Mosquito Traps, Cockroach Traps, Yankee Match Safes, Blacking, Bird Cages, Boys' Locomotives, Steamboats, Rotary Knife Cleaner, Apple Parer and Automaton Slicers, Furniture and Stove Polish, and leading articles of domestic use. Dealers' orders promptly supplied. I. S. CLOUGH, Manufacturers' Agents Store, 489 Broadway. Established 1846. Removed from 165 Broadway to the corner of Broome st. Centrally located to all who visit New York City. 1

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**FOR TWO** LETTER STAMPS I will send (free of postage) six Anatomical Engravings, with remarks. Address J. R. STAFFORD, Practical Chemist, 16 State st., New York. 45 4

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**TO PATENTEES AND PURCHASERS**—The subscriber will examine or experiment on the working of new machines and processes, prepare elaborate reports, and give professional opinions for public or private use. Refers to Munn & Co. THOS. D. STETSON, Consulting Engineer, 5 Tryon Row, New York. 45 tf

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**WAIT'S** PATENT SPOKE MACHINE does double the amount of work with the same amount of power, and equally as good as any machine in use. Machines and rights for sale very low. Address P. H. WAIT, Barkerville, Saratoga co., N. Y. 45 4*

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**VALENTINE & BUTLER**, Patentees and Manufacturers of the alum patent fire and burglar-proof safe, and of the rotary lock for hall and store doors, 90 and 92 Maiden Lane, New York. 45 2

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**FOR FOUR** LETTER STAMPS I will send (free of postage) a copy of the celebrated 100 Metropolitan Hotel recipes for Cooking, Baking, Making Pastry, Preserves, &c. As these recipes are copyright, they cannot be had except of J. R. STAFFORD, 16 State st., New York. 45 4

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**MECHANICS AND MANUFACTURERS**—Tennessee Exhibition. The Third Annual Fair of the Mechanics' Institute of Tennessee will be held at Nashville in October next. Exhibitors from all the States will be permitted to enter articles and compete for the first premiums. For particulars address WM. STOCKELL, President, or H. K. WALKER, Secretary. 45 5

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**WOODWORTH PLANING MACHINES** of superior style and workmanship, of various sizes, and the latest improvements. Also Steam Engines and Boilers, Sash and Blind Machinery, Lathes, Planers, Drills, Belting, and all kinds of Machinists' Tools on hand, and for sale at the Machine Depot, 163 Greenwich st., New York. A. L. ACKERMAN. 45 8

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**CRYSTAL PALACE**—This splendid edifice is now under the auspices of the American Institute. Samples of the productions of our country in Agriculture, Manufactures, and the Arts, will be received for public inspection. All information relative thereto will be given at the Palace by addressing WM. B. LEONARD, Corresponding Secretary and Agent. 45tf

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**1000 AGENTS**—For new, sure, unparalleled inducements. Send stamp to M. J. COOK Detroit, Mich. 44 2*

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**E. G. CUSHING'S** Unequalled Straw and Stalk Cutter.—For finished work, or the right of territory, address the inventor, Dryden, Tompkins county, N. Y. 44 10*

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**L. D. GOODWIN'S** celebrated Patent Central Vent Water Wheel For wheels or the right of territory address J. W. DWIGHT, Dryden, N. Y., or E. C. BRAMHALL, 190 Fulton, N. Y. 44 10*

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**STEAM ENGINES FOR SALE**—One of 8, one of 12, and one of 18 horse-power. H. A. CRANE, cor. 29th st. and 11th ave. 44 6*

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**WOODWORTH'S PATENT PLANING MAchines**—Patent expires Dec. 27th, 1856. Machine constantly on hand, together with steam engines and boilers of all sizes. Lathes, planers, drills, circular saw mills, belting of leather and rubber of the best quality, Orders respectfully solicited at the Machinery Depot, 163 Greenwich st., N. Y. A. L. ACKERMAN. 45

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**WANTED**—300 Active Young Men, at a salary of $100 per month. A capital of only $5 required. Full particulars given to all who inclose a stamp and address N. R. GARDNER, Peace Dale, R. I. 44 5*

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**FIRST CLASS** Family Journals:—Life Illustrated, a first class pictorial paper, weekly. $2 a year, $1 for half a year. Water-Cure Journal, devoted to the laws of life and health. $1 a year. Phrenological Journal, devoted to the improvement of mankind. $1 a year. The three journals sent one year for $3. Address FOWLER AND WELLS, 308 Broadway, N. Y. 44 2

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**WATER WHEELS**—"Mr. J. H. BEST—Dear Sir The wheel you put in my woolen factory, of six setts, with eleven feet head, has had a severe trial—running under 8 feet of water with only five feet head, while the Parker, Tripp, and other wheels (about 200 on this stream) were stopped. We can now run to speed with 300 inches of water, and before we had two wheels using 1,200 inches You have secured a good reputation here, and can draw on me for as good a recommendation as desired for your wheel. Yours truly, AMOS KING."

The above is one of Vandewater's celebrated improved Jonval Turbines, and can be had of H. VANDEWATER & CO., Albany, N. Y., or of JACOB H. BEST, Springfield, Ohio, who will furnish wheels for any of the Western States. 44 2*

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**SENT POST PAID FOR $1 IN GOLD**—Fishermen would do well by getting Gardner's new, sure and easy way of catching all kinds of fish. Address N. R. GARDNER, Peace Dale, R. I. 43 3*

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**TO MILLERS AND MILLWRIGHTS**—Patent rights of our Grain Feeder to Millstones for sale on moderate terms. See illustration in No. 43, this Vol., Scientific American. M. & C. PAINTER, Owings' Mills, Baltimore co., Md. 43 3*

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**DR. D. BREED**, late Assistant and acting Chief Examiner in the U. S. Patent Office, has established at Washington, D. C., a chemical laboratory for experiment and analysis, in order to test and improve processes of manufacture, and mechanical devices employed in the chemical arts, and to procure and defend patent rights. After many years devoted to chemistry (having studied in the German laboratories) Dr. Breed feels confident in offering his services as a practical chemist to inventors and others interested in the chemical arts and manufactures. 44 4*

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**CAST STEEL WIRE DRAWING** at the Union Works, Paterson, N. J. Orders solicited and carefully filled by CHAMBERLIN & CO. 43 13*

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**COMMERCIAL AGENTS**, able and honest men from New England or New York. A. W. HARRISON, Philadelphia, Pa. 35 13*

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**MACHINISTS' TOOLS**—LEONARD & CLARK, 11 Platt st., New York, manufacturers of Lathes and Planers, and dealers in Steam Engines, Boilers, Wood Tools, Belting, &c. Awarded the gold medal 1855 and '56 of the American Institute, and bronze medal of the World's Fair 1853, for the best lathes on exhibition Machine shop at Woodna, Orange co., N. Y. 42 4*

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**WANTED**—Old Steam Boilers, 36 to 48 inches diameter, ten in number, or in all, 200 feet in length. Apply to E. WHITNEY, New Haven, Conn. 40 6

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**ENGINEERING.**—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.

CHARLES W. COPELAND,
27 eowtf Consulting Engineer, 64 Broadway

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**CLOCKS FOR CHURCHES**, Court Houses, &c. (First Premium, at the Fair 1856 and 1857); also Regulators and Time Pieces for jewellers, Railroads, &c.; illuminated dials of all sizes, all warranted. Address JOHN SHERRY, Oakland Works, Sag Harbor, N. Y. 23 12*eow

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**SWISS DRAWING INSTRUMENTS**—A full stock of these celebrated instruments always on hand. Catalogues gratis. AMSLER & WIRZ,
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**THE AMERICAN ROCK DRILL CO.**, invit attention to their superior machines for Artesia Wells and heavy rock excavations. Circulars and information sent on application to T. H. LEAVITT, Agent, No. 1 Phœnix Building, Boston. A few responsible agents wanted in the Middle and Western States. 43 3*

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**WOODWORTH'S PATENT PLANING MA**chines of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl st., Brooklyn, N. Y., three blocks above Fulton Ferry. 35 tf

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**STEAM PUMPS**, Boiler Feed Pumps, Stop Valves, Oil Cups, Cocks, Steam and Water Gauges, sold by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

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**ENGRAVING ON WOOD** and **MECHANICAL DRAWING**, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

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**TO INVENTORS AND MANUFACTURERS**—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin sts. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises. 43 tf

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**MACHINE BELTING**, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY John H. Cheever, Treasurer, No. 6 Dey street, N. Y 40 tf

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**BOILER INCRUSTATIONS PREVENTED**—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 27 tf

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**FIVE HUNDRED THOUSAND LOOMS** in the United States—Wm. H. Howard's Comb Temples, patented May 26, 1857, are already in successful operation. The principle is new; it measures every pick to an equal length, indicates the number of picks per inch, leaves a smooth and equal selvage, without displacing threads or marking cloth; simple, cheap and durable, and destined to supersede all other self-acting temples. Orders for temples, or inquiries for rights to manufacture will receive immediate attention if addressed to GEO. C. HOWARD, 18th, below Market, Philadelphia. 42 4*

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**FORBES & BOND**, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c

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**SPOKE LATHES**, Blanchard's patent. Power Hub Mortising Machines, Hub Hewing Machines, Hub Boring Machines, Turning Lathes, Scroll Saws, Wagon and Coach Makers' machinery in general. We are also agents for the proprietors of the Blanchard patent. LANE & BODLEY, Cincinnati, O. 44 4*

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**LAP-WELDED IRON BOILER TUBES.**—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner.
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# Science and Art.

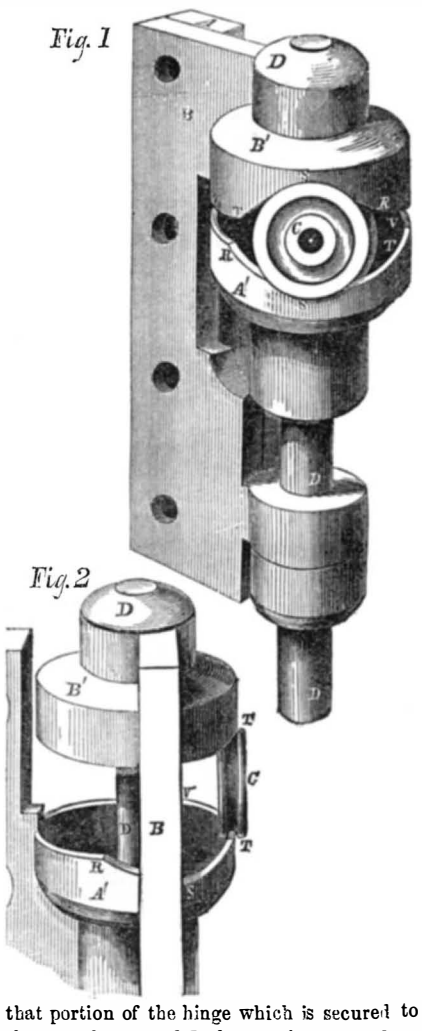
### Bullard's Door Hinge.

The accompanying figures represent a hinge invented by S. M. Bullard, of Holliston, Mass. It is intended to serve in lieu of one of the ordinary hinges for doors, gates, blinds or shutters, for the purpose of closing the same by their own weight as the motive power; it is termed by the inventor a *self-closing door hinge.*

The hinge is without a spring of any kind, and consists of four parts made of iron or other metal. It involves simply a detached anti-friction roller, grooved or hollowed on its edge, moving between two circular inclined planes, which are formed upon the edges of cup-shaped pieces, connected with the flanges of the hinge, the upper inclined plane to the flange attached to the door; and the lower inclined plane to the flange attached to the door frame.

Fig. 1 represents the hinge in the position it assumes when the door is closed. Fig. 2 is a view of the hinge one-quarter open, or in the position it would be when the door was at right angles to its frame. A represents

Fig. 1




that portion of the hinge which is secured to the door frame, and B the portion secured to the door, the fastenings being of the ordinary character. A′ represents a cup-like projection cast on A, with the hollow part of the cup presented upwards. B′ represents a corresponding cup fixed on B, with its open portion downwards. C represents a roller or small wheel, grooved on its edge, and traveling between the rims of the cups A′ and B′. This roller thus receives the whole weight of the door, and as the door is opened or closed by the hand, the roller C travels around between the rims of the respective cups.

Were the rims of the cups perfectly level, the wheel or roller C would serve simply as a friction wheel, to facilitate the turning of the door. But this is not the form employed. The rim of the cup A′ is hollowed out at one point, as represented at the portion R S T, and the rim of B′ is also hollowed as represented by T S R. The gravity of the door, therefore, tends to turn the parts into the position represented in Fig. 1, where the roller C stands between the points S S, and allows the door to swing to the lowest practicable position, which is so arranged as to be the shut position. As the door is opened, the roller C is compelled to ascend the gradual incline S T, on the rim of A′, and assume the position shown in Fig. 2, while the same motion also compels the inclined surface T S of the cup B′ to ride up or mount upon C, so that the action is that of a double inclined plane, and the door is elevated to a considerable extent, reaching, in practice, to one inch, or more if necessary. When the door is open to a certain extent, represented in our engravings as about one-quarter of a revolution, the roller C mounts upon the plane or level portion of the respective cups, and from this point any further opening of the door does not raise it. Consequently the roller C serves simply as a friction roller on such portions of the revolution as lie beyond these inclines; but the gravity of the door acts as a weight to draw itself into a shut position, whenever the roller C stands on the respective inclined surfaces between S and T.

It will be seen that this roller performs no duty except that of supporting the weight, and possesses no ability to resist a lateral force. The whole lateral strain on the hinge, therefore, must be sustained by the bolt D, which passes, as represented, through both the parts A′ and B′ of the hinge, and also of a portion below, fast to each of the parts A and B. These lower parts are arranged and constructed in a manner similar in effect to ordinary gate hinges. These support the lower extremity of D, and secure the strength and perfection of the whole construction. The inventor has had one in use on a heavy door, for many months, and represents its action as all that can be desired. There are no springs employed, and the stout castings are evidently little liable to wear or fracture.

For further information, address the inventor, S. M. Bullard, at Holliston, Mass., or at 409 Washington street, Boston, Mass. This invention was patented June 2, 1857.

## BRADLEY'S SHEEP-SHEARING MACHINE.

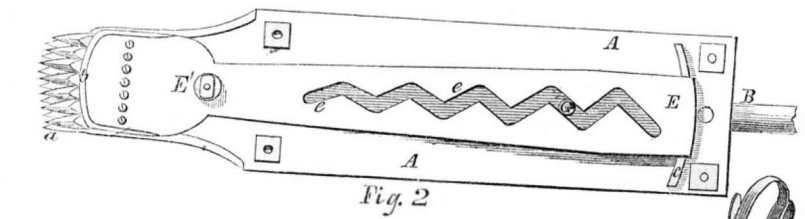
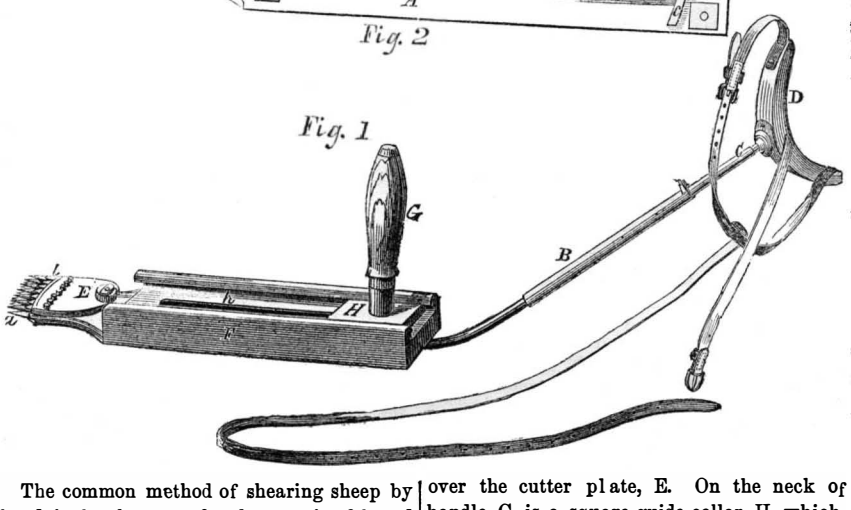



Fig. 1




The common method of shearing sheep by hand is by the use of a large pair of broad spring-bladed shears, having no pivot or pin like common scissors, but are clasped in the hand, and the blades pressed together to make a clip, then the hand is partially opened for the blades to spring back, then closed again for a succeeding clip, and so on. Shearing sheep is a slow operation, and requires considerable practice to make the clips evenly, which is the most important part, because the wool should be shorn as close to the skin as possible, and the clips should be uniform in the depth of cut. By common shears this is not an easy task, for there is no positive guide for the hand of the shearer; he is therefore liable to make deep and light clips, and oftentimes cuts the animals.

The accompanying figures represent a neat, small machine for shearing sheep, and is designed to do the work quicker, and in a more uniform and simple manner than by common sheep shears. The principle upon which the cutters operate is similar to that of harvesting machines, and the operator simply guides the machine over the body of the animal with his left hand, while his right only moves the handle of the cutters backward and forward, giving them a reciprocating cutting action. Fig. 1 is a perspective view of the machine or instrument, and Fig. 2 is a top view, with the guide box or plates removed, showing the cutter plate and its zig-zag guide slot. A is a bottom plate, having a series of fingers, *a*, on its outer end. The inner end of this plate is attached to a bent tube, B, into which is fitted a rod, C, held by a screw. A shoulder piece, D, is secured to this rod by a universal joint. E is a plate having a series of cutters fastened on its outer end, and it is pivoted at E′ to the lower plate A; its back end rests upon a curved guide, *c*, which raises it a short distance above the lower plate. There is a zig-zag slot, *e e*, running lengthwise, and in this is inserted the guide pin of handle G. This plate is operated by the handle, and forms a clipping lever vibrating on the fulcrum pin, E′. A box composed of two side plates, F, and a top plate with a straight slot, *h*, in it, is secured over the cutter plate, E. On the neck of handle G is a square guide collar, H, which moves in grooves in the side plates, F. These are all the parts of this sheep-shearing machine, except the binding straps.

*Operation.*—The shoulder-piece, D, is placed under the right shoulder in the armpit, and the instrument is strapped to the body. The operator is then ready to commence shearing; he places the point or fingers of the instrument on that part of the animal where he wishes to commence cutting, then pushes handle G back and forth, thrusting, at the same time, the instrument forward as fast as he cuts over the body of the sheep until the whole fleece is shorn. The clips are made so as to allow the wool to fold over right and left to give the operator a clear view of what he is doing. The pin of handle, G, in the zig-zag slot, *e e*, gives the cutters a vibrating motion, and they cut like shears as it (the pin) is moved back and forth by the handle. Five clips in each direction are made while the handle is moved back and forth. The cutters, therefore, are capable of receiving a very rapid motion, and the fingers, *a*, enable a cut of a uniform depth to be taken throughout the whole operation.

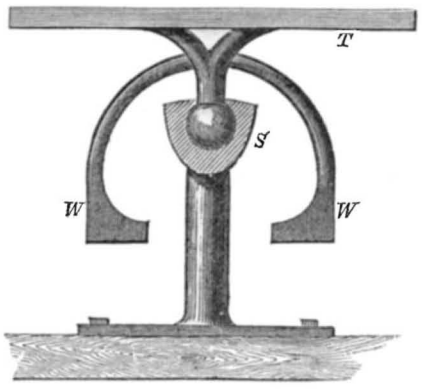
This machine or instrument for shearing sheep is of simple construction, and it can be operated with great dexterity and ease, as the universal joint of the crutch allows great freedom of movement to the operator. A patent was granted for it on the 27th of January last to R. P. Bradley, of Cuyahoga Falls, Ohio, from whom further information may be obtained by mail.

### Ohio Cannel Coal and Coal Oil.

A company has been organized, and has purchased a considerable extent of cannel coal lands in the counties of Coshocton, Muskingum and Licking, in Ohio. Some of the seams are seven feet thick, and the coal is of the best quality. This company is now erecting substantial brick buildings in Newark, Ohio, for the manufacture of coal oil, and also to supply that city with gas. These works are expected to be in full operation in the month of September next.

### Dining Tables at Sea.

A correspondent of the London *Mechanics' Magazine* proposes the following mode of constructing tables, in order that they may keep their horizontal position when a vessel is in




motion. The table, T, moves by means of a ball fixed in the socket, S, which is fastened to the deck. W W are weights which preserve it in a horizontal position. The same principle, he urges, would of course apply to many forms.

### Fair of the Tennessee Mechanics' Institute.

The third annual fair of the above institution, as will be found by reference to our advertising columns, is to be held in the city of Nashville, in the month of October next. Exhibitors from all parts of the country are invited to enter articles to compete for the premiums. This is a spirited Mechanics' Institute, designed to advance manufactures and the arts in the State of Tennessee. We trust that the mechanics, manufacturers and agriculturists of Tennessee will not count upon sacrifices in endeavoring to make this fair the very best they have yet held.

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